

BHP BILLITON ENERGY COAL SOUTH AFRICA (PTY) LIMITED

**MIDDELBURG MINE KLIPFONTEIN SECTION PROPOSED
EXTENSION OF OPENCAST OPERATIONS AND ASSOCIATED
RELOCATION OF ROAD D253**

FINAL SCOPING REPORT

MDEDET Reference Number: 17/2/3N/-349

Report No.: JW104/14/E333 - Rev A

OCTOBER 2014





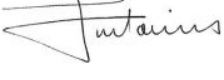
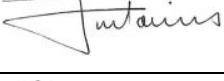

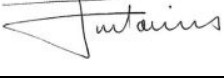




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BHP BILLITON ENERGY COAL SOUTH AFRICA (PTY) LIMITED

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FINAL SCOPING REPORT

REPORT NO: JW104/14/E333 - Rev A

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Appendix A

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List of Abbreviations / Acronyms

Abbreviation / Acronym	Meaning
BA	Basic Assessment
BECSA	BHP Billiton Energy Coal South Africa (Pty) Limited
CBO	Community Based Organisation
dBA	Decibels (A-weighted measurements)
DMR	Department of Mineral Resources
DSR	Draft Scoping Report
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme (NEMA)
EMPR	Environmental Management Programme Report (MPRDA)
FSR	Final Scoping Report
GNR	Government Notice Regulation
HIA	Heritage Impact Assessment
I&AP	Interested & Affected Party
ITCZ	Intertropical Convergence Zone
IWULA	Integrated Water Use Licence Application
J&W	Jones & Wagener Engineering and Environmental Consultants (Pty) Ltd
LOM	Life-of-Mine
MDEDET	Mpumalanga Department of Economic Development, Environment and Tourism
MDPWRT	Mpumalanga Department of Public Works, Roads and Transport
MPRDA	Mineral and Petroleum Resources Development Act
MPRDR	Mineral and Petroleum Resources Development Regulations
NEMA	National Environmental Management Act
NFEPA	National Freshwater Ecosystem Priority Areas
NGO	Non-Governmental Organisation
NSBA	National Spatial Biodiversity Assessment
NWA	National Water Act
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SANS	South African National Standards
S&EIR	Scoping & Environmental Impact Reporting

STLM	Steve Tshwete Local Municipality
ToR	Terms of Reference
WMA	Water Management Area
WUL	Water Use Licence

**NATIONAL ENVIRONMENTAL MANAGEMENT ACT – SCOPING REPORT
CHECKLIST**

Regulation	Description	Reference in report
NEMA Regulations – Contents of a Scoping Report		
28 (1) a	Details of the EAP and relevant expertise	Section 1.3
28 (1) b	Description of the proposed activity	Section 3
28 (1) c	Description of alternatives	Section 5
28 (1) d	Description of the property on which the activity is to be undertaken and location of the activity	Section 3.1
28 (1) e	Description of the environment that may be affected and the manner in which the activity may affect the environment	Section 4
28 (1) f	All legislation and guidelines that have been considered in preparing the scoping report	Section 2
28 (1) g	Description of environmental issues and potential impacts, including cumulative impacts that have been identified	Section 7
28 (1) h	Public participation process	Section 6.2
28 (1) h (i)	Steps taken to notify I&APs	Section 6.2
28 (1) h (ii)	Proof of notice boards, advertisements and notices notifying potential IA's of the application	Section 6.2 and Appendix B
28 (1) h (iii)	Stakeholder database	Appendix B
28 (1) h (iv)	Issues and Response Report	Appendix B
28 (1) i	Description of the need and desirability of the proposed activity	Section 3.3
28 (1) j	Description of the alternatives and the advantages and disadvantages that the proposed alternatives may have on the environment	Section 5
28 (1) k	Copies of comments from stakeholders	Appendix B
28 (1) l	Minutes from I&AP meetings	Appendix B (as Comments and Response Report)
28 (1) m	Issues and Response Report	Appendix B
28 (1) n	Plan of Study for EIA	Section 8
28 (1) n (i)	Description of the tasks proposed for the EIA phase, including specialist studies and the manner in which specialist studies will be undertaken	Section 8
28 (1) n (ii)	Indication of the stages at which the competent authority will be consulted	Section 6.1
28 (1) n (iii)	Description of the methodology to be used for assessing environmental issues and alternatives including the option of not proceeding with the activity	Section 8

Regulation	Description	Reference in report
NEMA Regulations – Contents of a Scoping Report		
28 (1) n (iv)	Description of the public participation process to be conducted during the impact assessment phase	Section 8.3
28 (o)	Any specific information required by the competent authority	N/A
28 (p)	Any other matters required in terms of Sections 24 (4)(a) and (b) of NEMA	N/A

MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT – SCOPING REPORT CHECKLIST

Regulation	Description	Reference in report
MPRDA Regulations – Contents of a Scoping Report		
Section 49 (1)	A scoping report, in relation to a proposed mining operation, must:	
a.	Describe the methodology applied to conduct scoping;	Section 6
b.	Describe the existing status of the environment prior to the mining operation;	Section 4
c.	Identify and describe the anticipated environmental, social and cultural impacts, including cumulative effects, where applicable;	Section 7
d.	Identify and describe reasonable land use or development alternatives to the proposed operation, alternative means of carrying out the operation and the consequences of not proceeding with the proposed operation;	Section 5
e.	Describe the most appropriate procedure to plan and develop the proposed mining operation;	Section 3
f.	Describe the process of engagement of identified interested and affected persons, including their view and concerns; and	Section 6.2
g.	Describe the nature and extent of further investigations required in the environmental impact assessment report.	Section 8



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1. INTRODUCTION

1.1 Background Information

1.1.1 Description of the Mining Process

BHP Billiton Energy Coal South Africa (Pty) Limited (BECSA) has identified mineable coal reserves at their existing Middelburg Colliery, Klipfontein Section. The identified coal reserves to be mined are predominantly the No. 2 seam with some No.4 seam and are located within the southern Klipfontein Section. In order to mine the identified reserves, BECSA proposes to extend its opencast operations onto Portion 15 of the farm Bankfontein 340 JS, Portions 4, 5, 10 and 17, the Remaining Extent of Portion 1 and the Remaining Extent of the farm Wolvenfontein 471 JS, within Steve Tshwete Local Municipality.

Currently the following is the proposed methodology and timeframe for mining the southern Klipfontein Section. Initially topsoil stripping, performed by contractors, will start at the first block on 1 January 2016. A boxcut will be developed using a truck and loader on the first couple of strips. From this point a dragline will then be used from 1 April 2017, moving in a South Eastern direction. All mining activities at Klipfontein are envisaged to be completed in the year 2026, based on the topsoil stripping schedule.

1.1.2 Description of the Road Closure Process

Associated with the proposed extension of the Klipfontein Section opencast mining operations, is the provincial D253 road. A section of the D253 road is located within the footprint of the proposed opencast pit and therefore will need to be closed and diverted if mining of this area were to proceed. Route alternatives are currently being assessed in collaboration with the landowners, farmers and other land users, as well as engineers. Viable route alternatives will be detailed in the next phase of this project.

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1.2 Regional Setting

1.2.1 Magisterial District

The proposed Klipfontein project is situated within the Steve Tshwete Local Municipality of the Nkangala District Municipality, in Ward 6 (**Figure 1-1**).

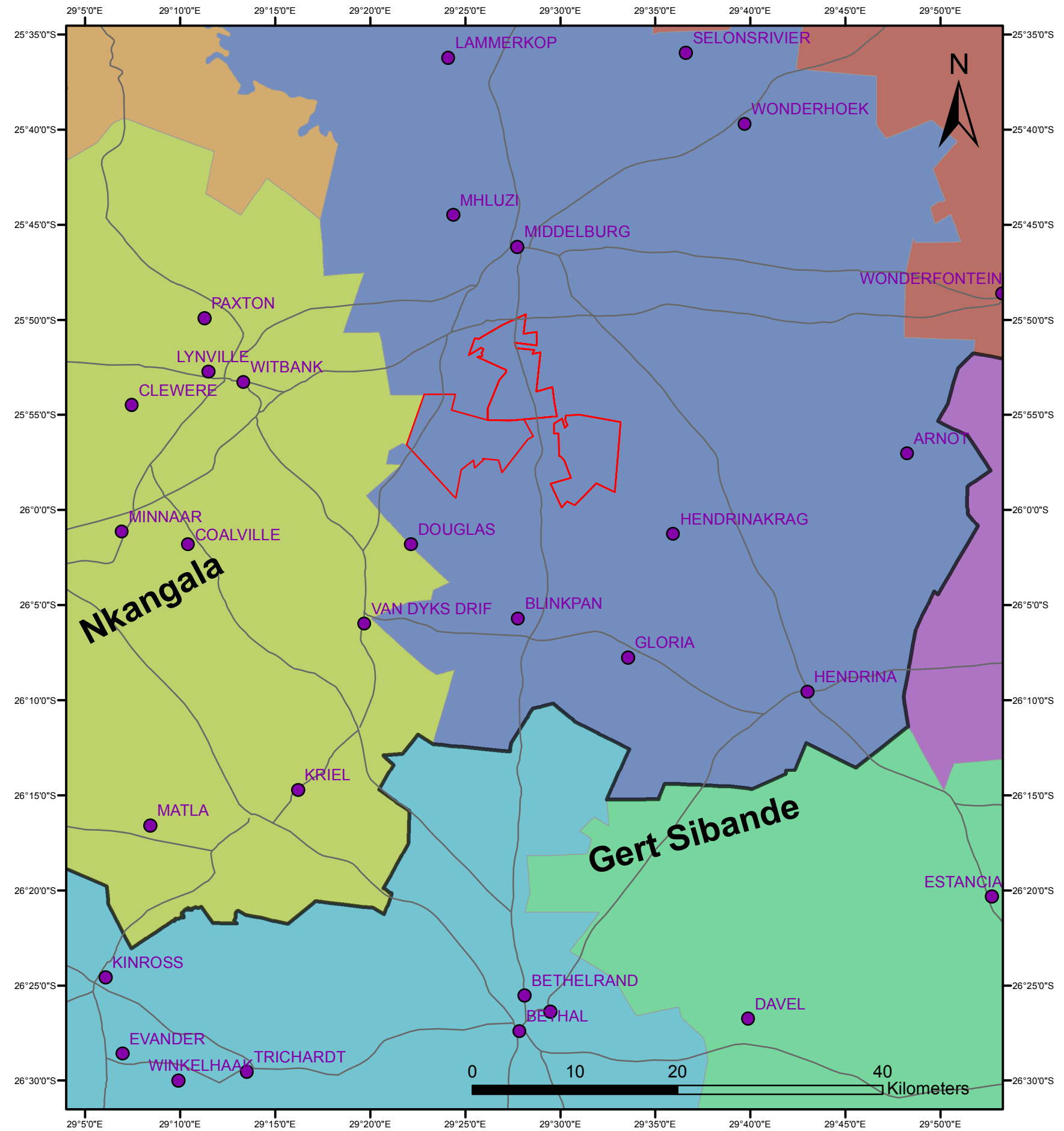
1.2.2 Direction and Distance to Neighbouring Towns

The distances to neighbouring towns from the proposed project are as follows:

Middelburg	± 25 km North
eMalahleni / Witbank	± 35 km North West

Legend

- Towns
 - Roads
 - Middelburg Mines' Boundary
 - District Municipalities
-
- ### Local Municipalities
- Albert Luthuli
 - Emalahleni
 - Govan Mbeki
 - Highlands
 - Msukaligwa
 - Steve Tshwete
 - Thembisile



1.3 Project Team Details

1.3.1 Applicant Details

In **Table 1-1** below, the details of the applicant are listed. This is the institution that will be legally responsible for the proposed new mining sections, road closure and road relocation at Klipfontein. The environmental authorisation and licences to construct and operate the Klipfontein road closure, road relocation and extension of opencast mining will be in the name of this legal institution.

Table 1-1: Applicant Details.

Project applicant:	BHP Billiton Energy Coal South Africa (Pty) Limited			
Trading name (if any):	BHP Billiton Energy Coal South Africa (Pty) Limited			
Contact person:	Mr Herman Swanepoel			
Physical address:	6 Hollard Street, Johannesburg, 2001, South Africa			
Postal address:	PO Box 61075, Marshalltown, 2107, South Africa			
Email:	herman.swanepoel@bhpbilliton.com	Tel:	+27136893122	Fax: +27136531582

1.3.2 Environmental Assessment Practitioner (EAP) Details

The details of the environmental practitioners responsible for the Scoping & Environmental Impact Reporting (S&EIR) and amendment of the Environmental Management Programme Report (EMPR) processes in respect of this project are provided in **Table 1-2** below.

Table 1-2: Environmental Consultant Details.

Environmental consultant:	Jones & Wagener Engineering & Environmental Consultants (Pty) Ltd			
Contact person:	Mr Marius van Zyl			
Postal address:	PO Box 1434, Rivonia, 2128			
E-mail:	vanzyl@jaws.co.za	Tel:	+27115190200	Fax: +27115190201

1.3.2.1. Expertise of the EAP

Table 1-3 below summarises the expertise of the main EAP team members associated with this project.

Table 1-3: EAP Team Members.

Name	Organisation	Highest Qualifications	Experience	Professional Registrations
Mr Marius van Zyl (Technical Director)	Jones & Wagener	BSc Honours Biochemistry BSc Honours Environmental Management	28 Years	Pr. Sci. Nat

Name	Organisation	Highest Qualifications	Experience	Professional Registrations
Ms Jacqui Hex (Project Manager)	Jones & Wagener	MSc Environmental Management	8 Years	Pr. Sci. Nat EAPASA
Mr J.C. Pretorius (Environmental Scientist)	Jones & Wagener	BSc (Hons.) Environmental Management	10 Years	-
Ms Gina Martin (Environmental Scientist)	Jones & Wagener	BSc Honours Geography (Env. Sci)	1 Year	-
Ms Anelle Lötter (Public Participation)	Jones & Wagener	National Diploma in Journalism	21 Years	Member of the International Association of Public Participation (IAP2)

1.3.3 Technical Design Team Details

The details of the engineering consulting company responsible for the technical designs of this project are given in **Table 1-4** below.

Table 1-4: Engineering Consultant Details.

Engineering consultant:	Jones & Wagener Engineering & Environmental Consultants (Pty) Ltd				
Contact person:	Pierre van der Berg/Rudi Aschenborn				
Postal address:	PO Box 1434, Rivonia, 2128				
E-mail:	rudi@jaws.co.za	Tel:	+27115190200	Fax:	+27115190201

1.3.4 Competent Authority Details

Two competent authorities are relevant to this project:

- The Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET); and
- The Department of Mineral Resources (DMR).

The details of the competent authorities relevant to this project are given in **Table 1-5** below.

Table 1-5: Competent Authority Details.

Competent Authority:	MDEDET				
Contact person:	Ms Okwethu Fakude				
Postal address:	Private Bag X 11215, Nelspruit, 1200, South Africa				
E-mail:	oqfakude@mpg.gov.za	Tel:	+27136927934	Fax:	+27137664614



Competent Authority:	DMR				
Contact person:	Mr Samuel Mathavhela				
Postal address:	Province House, Cnr Paul Kruger and Botha Street, Witbank, 1035				
E-mail:	samuel.mathavhela@dmr.gov.za	Tel:	+27136530500	Fax:	+27136903288

1.4 Context of this Report

This report is the Final Scoping Report (FSR), a key component of the environmental authorisation process for the proposed Klipfontein extension of mining, partial road closure and road relocation project near Middelburg in the Mpumalanga Province.

1.5 Objectives of this Report

This report addresses the requirements for the Scoping Phase of the S&EIR as outlined in the National Environmental Management Act (NEMA) regulations, as well as the Scoping Phase of the EMPR as outlined in the Mineral and Petroleum Resources Development Act (MPRDA) regulations. The aim of this FSR is to:

- Provide information to the authorities as well as interested and affected parties on the proposed project;
- Provide information regarding alternatives that are being considered;
- Indicate how interested and affected parties have been and are still being afforded the opportunity to contribute to the project, verify that the issues they raised to date have been considered, and comment on the findings of the impact assessments;
- Describe the baseline receiving environment;
- Define the Terms of Reference (ToR) for specialist studies to be undertaken in the Impact Assessment Phase of the Environmental Impact Assessment (EIA); and
- Present the outcomes of the Scoping Phase in a manner that facilitates decision-making by the relevant authorities.

1.6 Project Progress

An Environmental Impact Report (EIR) and an EMPR both comprise of a Scoping Phase and an Impact Assessment Phase. The project is currently in the Scoping Phase where the following has been completed:

- Pre-application consultation with relevant stakeholders and authorities (please refer to **Table 1-6** for a list of the authorities consulted with);
- Completion and submission of the relevant application documentation;
- Placement of announcement advertisements;
- Compilation and distribution of a Background Information Document (BID);

- Individual stakeholder consultations with affected landowners;
- Compilation of a DSR;
- Placing the DSR on public review;
- Compilation of a FSR; and
- Placing the FSR for public and authority review (current).

Table 1-6: List of Authorities.

Authorities Consulted	Mpumalanga Department of Economic Development, Environment and Tourism
	Mpumalanga Department of Agriculture, Rural Development and Land Administration
	Mpumalanga Department of Public Works, Roads & Transport
	Mpumalanga Tourism and Parks Agency
	Mpumalanga Department of Safety & Security
	Department of Agriculture, Forestry and Fisheries
	Department of Mineral Resources
	Department of Water and Sanitation
	Nkangala District Municipality
	Steve Tshwete Local Municipality

2. LEGAL REQUIREMENTS

2.1 Introduction

Environmental legislation in South Africa was promulgated with the aim of, at the very least, minimising and at the most preventing environmental degradation. The following Acts and Regulations are applicable to the proposed project.

2.2 Applicable Legislation

2.2.1 The Constitution of the Republic of South Africa (Act 108 of 1996)

Section 24 of the Constitution states that: Everyone has the right to:

- An environment that is not harmful to their health or well-being; and
- Have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-
- Prevent pollution and ecological degradation;
- Promote conservation; and
- Secure ecologically sustainable development and use of natural resources, while promoting justifiable economic and social development.

The current environmental laws in South Africa concentrate on protecting, promoting, and fulfilling the nation's social, economic and environmental rights; while encouraging public participation, implementing cultural and traditional knowledge and benefiting previously disadvantaged communities.

2.2.2 Mineral and Petroleum Resources Development Act (Act 28 of 2002)

The Mineral and Petroleum Resources Development Act (MPRDA) is the central Act governing mining in South Africa. The MPRDA repealed the Minerals Act, 50 of 1991 when it came into effect on 1 May 2004. The preamble to the MPRDA affirms the State's obligation to protect the environment for the benefit of present and future generations, to ensure ecologically sustainable development of mineral and petroleum resources and to promote economic and social development.

Broadly speaking, the MPRDA seeks to fulfil the obligation of the State to protect the environment and to ensure ecologically sustainable development through a system requiring a person who wishes to conduct mining operations to prepare and have approved an Environmental Management Programme (EMPR) and to manage the environmental impacts of its mining operations in accordance with the provisions contained in such an EMPR and other applicable legislation. The legislative basis relating to the management of the environmental impact of mining operations are set out in Chapter 4 (sections 39 to 47) of the MPRDA. The formal and substantive requirements with respect to the management of the environmental impacts of mining operations (particularly with respect to EMPRs) are substantiated in Part III of Chapter 2 of the Mineral and Petroleum Resources Development Regulations (MPRDR) promulgated in terms of Government Notice Regulation (GNR) 527 of 23 April 2004 (as amended).

2.2.3 National Environmental Management Act (Act 107 of 1998)

The National Environmental Management Act (NEMA) can be regarded as the most important piece of general environmental legislation. It provides a framework for environmental law reform and covers three areas, namely:

- Land, planning and development;
- Natural and cultural resources, use and conservation; and
- Pollution control and waste management.

The law is based on the concept of sustainable development. The objective of the NEMA is to provide for co-operative environmental governance through a series of principles relating to:

- The procedures for state decision-making on the environment; and
- The institutions of state which make those decisions.

The NEMA principles serve as:

- A general framework for environmental planning;
- Guidelines according to which the state must exercise its environmental functions; and
- A guide to the interpretation of NEMA itself and of any other law relating to the environment.

Some of the most important principles contained in NEMA are that:

- Environmental management must put people and their needs first;

- Development must be socially, environmentally and economically sustainable;
- There should be equal access to environmental resources, benefits and services to meet basic human needs;
- Government should promote public participation when making decisions about the environment;
- Communities must be given environmental education;
- Workers have the right to refuse to do work that is harmful to their health or to the environment;
- Decisions must be taken in an open and transparent manner and there must be access to information;
- The role of youth and women in environmental management must be recognised;
- The person or company who pollutes the environment must pay to clean it up;
- The environment is held in trust by the state for the benefit of all South Africans; and
- The utmost caution should be used when permission for new developments is granted.

2.2.3.1. *Environmental Impact Assessment (EIA) Regulations: 543-546 of 18 June 2010*

A Scoping and Environmental Impact Reporting (S&EIR) process is applicable to all projects likely to have significant environmental impacts due to their nature or extent, activities associated with potentially high levels of environmental degradation, or activities for which the impacts cannot be easily predicted. In comparison a Basic Assessment (BA) is required for projects with less significant impacts or impacts that can easily be mitigated. The difference between the processes relates to the nature of the proposed development in terms of its potential impact on the environment, and this is reflected in the level of detail that information is collected in as well as the level of interaction with Interested and Affected Parties (I&APs).

2.2.4 Environment Conservation Act (Act 73 of 1989)

The Environment Conservation Act is a law that relates specifically to the environment. Although most of this Act has been replaced by the NEMA there are still some important sections that remain in operation. These sections relate to:

- Protected natural environments;
- Littering;
- Special nature reserves;
- Limited development areas; and
- Regulations on noise, vibration and shock.

2.2.5 National Water Act, 1998 (Act 36 of 1998)

The National Water Act (NWA) guides the management of water in South Africa as a common resource. The Act aims to regulate the use of water and activities that may impact on water resources through the categorisation of 'listed water uses' encompassing water extraction, flow attenuation within catchments as well as the potential contamination of water resources, where the Department of Water and Sanitation (DWS, previously Department of Water Affairs (DWA)) is the administering body in this regard. Should the proposed activities associated with the proposed project impact on water resources e.g. cross through rivers, the applicant would be responsible to obtain a water use licence from the DWS.

Section 19 of the NWA deals with the prevention and remedying of water pollution effects by the person or organisation responsible, while Section 21 defines various water uses and Section 22 requires that a person may only use water if licensed in terms of the NWA. The use of water does not necessarily mean the consumptive use thereof, but covers any aspects that have or could have an impact on a watercourse, such as the disposal of waste.

2.2.6 National Environmental Management: Waste Act (Act 59 of 2008)

Through the National Environmental Management Waste Act (NEM:WA), a new era of an integrated waste management system in South Africa has been established. The NEM:WA came into effect in July 2009. Provisions have been made in the form of legislative and regulatory tools to facilitate and ensure implementation of the Act by all spheres of government. A Waste Management Activity List was published in July 2009 which has clear thresholds on waste activities that need authorisation prior to commencement. The published Waste Management Activity List effectively replaces Schedule 1 of the NEMA and all waste related activities listed in EIA listing notices.

2.2.7 National Environmental Management: Air Quality Act (Act 39 of 2004)

The object of this Act is -

- To protect the environment by providing reasonable measures for -
- The protection and enhancement of the quality of air in the Republic of South Africa;
- The prevention of air pollution and ecological degradation; and
- Securing ecologically sustainable development while promoting justifiable economic and social development.

Generally to give effect to Section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people.

2.2.8 The National Heritage Resources Act (Act 25 of 1999)

The National Heritage Resources Act legislates the necessity for a cultural and Heritage Impact Assessment (HIA) in areas earmarked for development, which exceed 0.5 ha. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA). Should the proposed activities impact on heritage resources, application to SAHRA would be required to obtain the necessary permits. The requirements of the National Heritage

Resources Act have thus been addressed as an element of this process, specifically by the inclusion of a heritage assessment.

2.2.9 National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004)

The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed. Should protected species and ecosystems be impacted on by the proposed opencast mining, this Act may be applicable and the necessary measures should be taken for implementation.

2.2.10 National Spatial Biodiversity Assessment

The National Spatial Biodiversity Assessment (NSBA) classifies areas as worthy of protection based on their biophysical characteristics, which are ranked according to priority levels.

2.2.11 Protected species – Provincial Ordinances

Provincial ordinances were developed to protect particular plant species within specific provinces. The protection of these species is enforced through permitting requirements associated with provincial lists of protected species. Permits are administered by the provincial departments responsible for environmental affairs.

2.2.12 Occupational Health and Safety Act (Act 85 of 1993)

This Act makes provisions that address the health and safety of working persons. The Act addresses amongst others the:

- Safety requirements for the operation of plant machinery;
- Protection of persons other than persons at work against hazards to health and safety, arising out of or in connection with the activities of persons at work;
- Establishment of an advisory council for occupational health and safety; and
- Provision for matters connected therewith.

The law states that any person undertaking upgrades or developments for use at work or on any premises shall ensure as far as is reasonably practicable that nothing about the manner in which it is constructed or operated makes it unsafe or creates a risk to health when properly used.

2.2.13 Mine Health and Safety Act (Act 29 of 1996)

This Act makes provisions that address the health and safety of persons working at a mine. The Act addresses amongst others the:

- Health and safety requirements for the activities associated with mining activities;

- Identifying hazards and eliminating, controlling and minimising the risks associated with health and safety at mines;
- Protection of persons other than persons at work against hazards to health and safety, arising out of, or in connection with, the activities of persons at work;
- Monitoring of health and safety conditions at mines;
- Establishment of an advisory council for mine health and safety; and
- Provision for matters connected therewith.

2.3 Legal Requirements for this Project

J&W has been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake an EMPR Amendment in terms of the MPRDA and a S&EIR process in terms of the NEMA, as well as an Integrated Water Use Licence Application (IWULA) in terms of the NWA. This report fulfils the requirements in terms of the Scoping Report content, as prescribed by the MPRDA and the NEMA.

2.3.1 NEMA

Prior to proceeding with the proposed extension, BECSA needs to obtain an environmental authorisation from the MDEDET. In terms of the EIA Regulations published in Government Notices R543 to R546 of the National Environment Management Act (NEMA, Act 107 of 1998), the proposed extension of the opencast mining operations at the southern Klipfontein section triggers several listed activities which are summarised below in **Table 2-1**. The triggered activities require a full S&EIR process to be undertaken in accordance with the NEMA.

Table 2-1: Listed Activities.

NEMA GN Regulation	Activity Number	Description
R544 of 18 June 2010	9	A pipeline with a diameter greater than 0.36m, a flow rate greater than 120ℓ/s and a length of more than 1km is proposed to be constructed in order to provide dewatering services to the proposed new opencast mining sections.
	11	Storm water management canals are proposed to be constructed around overburden stockpiles and mining areas. Structures for the diversion of a tributary of the Spookspruit around the mining area along with the construction of a bridge across the Spookspruit for a haul road is proposed. These will need to be authorised if they are within 32m of a watercourse.
	18	Additional haul roads are proposed to be constructed to the new opencast mining sections which are proposed to be undertaken within 32m of a watercourse.
	22	The proposed haul roads to be constructed for the new mining sections will have a width of approximately 50m.
	28	Overburden stockpiles resulting from the new sections of opencast mining may result in pollution of the land and/or surrounding watercourses and require a water use licence.
	47	As a result of the proposed closure of a section of road D253 due to the proposed mining of that area, possible road alternatives may require widening or lengthening in order to be used as appropriate alternatives.
R545 of 18 June 2010	18	It is proposed to close a section of the provincial road D253, in order to undertake opencast mining in that area.
R546 of 18 June 2010	4	Additional haul roads are proposed to be constructed to facilitate the proposed additional sections of opencast mining. With the proposed closure of provincial road



NEMA GN Regulation	Activity Number	Description
		D253, alternative roads need to be identified and/or upgraded, or a new road alternative needs to be constructed.
	12	The area in which the proposed project is to be undertaken constitutes vegetation of the type Eastern Highveld Grassland, which is classified as Endangered.
	14	The area in which the proposed project is to be undertaken constitutes vegetation of the type Eastern Highveld Grassland, which is classified as Endangered.
	19	As a result of the proposed closure of a section of road D253, possible road alternatives may require widening or lengthening in order to be used as appropriate alternatives.

2.3.2 MPRDA

In addition, the existing Klipfontein EMPR will be amended to include new developments which were not included in the approved EMPR. The amendment of the existing EMPR will be undertaken in accordance with the provisions of the Mineral and Petroleum Resources Development Act, (MPRDA, Act 28 of 2002) and will be submitted to the DMR for approval.

2.3.3 NWA

In terms of the NWA, all water uses as listed in Section 21 of the NWA require a Water Use Licence (WUL) process to be followed and approved by the DWS. The mining area for the proposed extension contains watercourses which may be affected by the proposed operations. The DWS requires that any operations located closer than 500 metres from a watercourse, such as a pan or a wetland, be licensed in terms of Section 21 of the NWA. Any water uses identified for the proposed project will be applied for in a separate report (the IWULA report).

3. PROJECT DESCRIPTION

3.1 Project Location

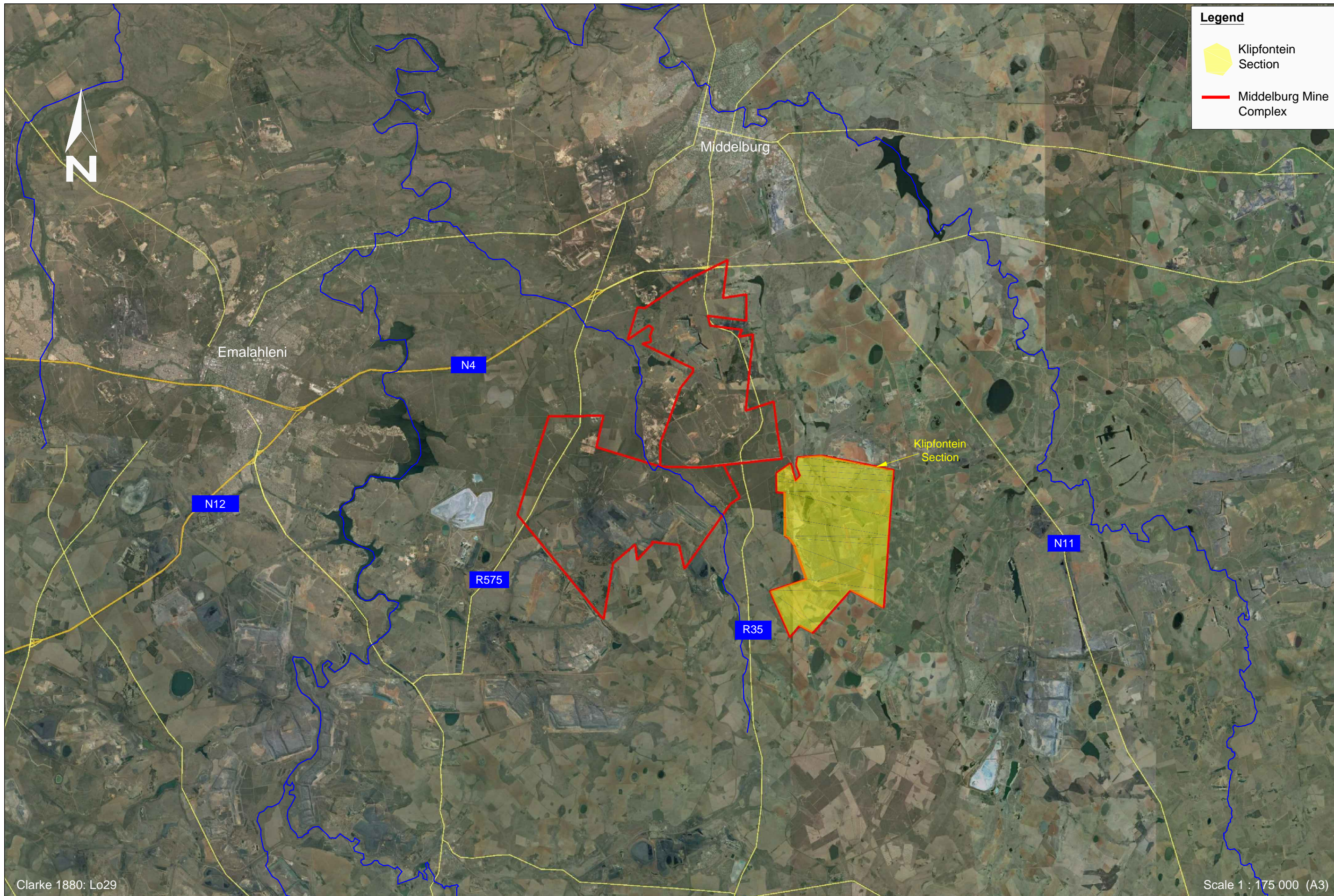
The southern Klipfontein Section of the Middelburg Colliery is situated approximately 25 km South of Middelburg, 35 km North West of eMalahleni (Witbank) in the Steve Tshwete Local Municipality (**Figure 3-1**). This mine is located in the uppermost reached of the Spookspruit catchment.

3.2 Background

BHP Billiton Energy Coal South Africa (Pty) Limited (BECSA) has proposed the extension of opencast operations and an associated closure of a section of the D253 road at the Middelburg Colliery's Klipfontein Section. With the closure of the road, alternative routes will have to be assessed to ensure continued access to farmers' land. BECSA has appointed Jones & Wagener Engineering and Environmental Consultants (Pty) Ltd (J&W) as the independent Environmental Assessment Practitioner (EAP) to undertake the required Scoping and Environmental Impact Reporting (S&EIR) and Environmental Management Programme Report (EMPR) Amendment process in order to identify and evaluate potential environmental impacts and to recommend measures to avoid or reduce negative impacts and to enhance positive impacts. The Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) is the

competent authority in terms of the required environmental authorisation. The Department of Mineral Resources (DMR) will be responsible for the approval of the amendment of the EMPR. The DWS will review the application for a Water Use Licence (WUL).

Figure 3-1: Locality Map.



Clarke 1880: Lo29

Scale 1 : 175 000 (A3)

3.3 Need and Desirability

The majority of South Africa's electricity is generated by the burning of coal. The national electricity utility that generates and distributes electricity to industrial, mining, commercial, agricultural and residential consumers and re-distributors is Eskom. Currently, Eskom relies on coal fired power stations to produce in the region of 95% of the electricity generated in South Africa. Until such time as alternative energy generation options can be executed on a large enough scale, Eskom is largely dependent on coal mining in order to supply electricity to the grid.

BECSA has identified mineable coal reserves at their existing Middelburg Colliery's Klipfontein Section. The identified coal reserves to be mined are predominantly the No. 2 seam with some No.4 seam and are located within the southern Klipfontein Section. In order to mine the identified reserves, BECSA proposes to extend its opencast operations onto Portion 15 of the farm Bankfontein 340 JS, Portions 4, 5, 10 and 17, the Remaining Extent of Portion 1 and the Remaining Extent of the farm Wolvenfontein 471 JS, within Steve Tshwete Local Municipality.

The proposed extension of current opencast mining will therefore sustain coal supply for electricity generation, as well as extend the LOM thereby extending the duration of job availability for current employees and potentially creating new job opportunities during construction phase.

3.4 Existing Infrastructure / Operations

The existing infrastructure at the Klipfontein Section of Middelburg Colliery includes, but is not limited to:

- Haul roads and gravel road infrastructure;
- Surface water management berms;
- Offices and workshops;
- Sewerage treatment plant;
- Power lines;
- Conveyors;
- Screener and crusher;
- Coal storage silos; and
- Pollution control dams, paddocks and evaporation dams (Klipfontein Dam, Infrastructure Dam and Rondeboschje Dam).

3.5 Components of the Project

The proposed extension of the opencast mining operations at the southern Klipfontein Section will involve the following developments.

- A section of the D253 provincial road needs to be closed as it is located within the footprint of the proposed opencast pit;
- New dewatering pipelines are required in order to ensure that affected water accumulated during operations is diverted to the existing Rondeboschje Pollution Control dam;
- New haul roads are required to extend into the new operations;

- New overburden/waste rock stockpiles will be required;
- A new power line (33 kV) will be required in order to operate the dragline;
- A stream diversion of the Spookspruit may be required;
- Roads may need to be upgraded or new roads may be required;
- Storm water infrastructure; and
- Vegetation will be cleared.

The above mentioned developments require the necessary environmental authorisation, an amendment to the existing EMPR and an application for an IWUL.

3.6 Major Activities of the Overall Project

There are five main phases within the proposed project, namely:

- Planning / Definition Phase;
- Construction Phase;
- Rehabilitation Phase;
- Operational and Maintenance Phase; and
- Decommissioning / Closure Phase.

Each of these phases is outlined below.

3.6.1 Planning / Definition Phase

During the planning phase, the proposed project is conceptualised. This includes undertaking preliminary designs of the proposed mining expansion, road closure and road diversion. **Section 5** evaluates the potential alternatives. Negotiations between the applicant and landowners will also conclude during this phase.

3.6.2 Construction Phase

Once the authorisation is received the proposed project will commence. This involves closing the D253 road, constructing or upgrading an alternate road (for landowner access and use), stream diversion of the Spookspruit and commencement of mining the newly authorised pits.

3.6.3 Rehabilitation Phase

Rehabilitation of any surrounding areas impacted by road upgrading or construction must occur after or concurrently with construction. Rehabilitation of the mine pits must occur after the operational phase has come to an end.

3.6.4 Operational and Maintenance Phase

Before the mining of the new proposed pits can commence, the D253 road will have to be closed and an alternative road constructed or upgraded. This will be undertaken by civil engineers and a construction team with the aid of a detailed design. The alternative road will be maintained during this phase and the Mpumalanga Department of Public Works, Roads and Transport (MDPWRT) is mandated to maintain this road.

The mining of coal will commence during this phase. The first box cut will be made using the truck and shovel method and the required infrastructure for the operation of a dragline will be completed, after which mining will progress using a dragline. Coal will be transported with trucks to the crusher/screener, from where it will be placed on a conveyor, transporting it to storage silos. From the storage silos, the coal will then be conveyed to the Middelburg Colliery for processing. No mineral beneficiation or processing will be undertaken at Klipfontein. Topsoil stripping will be conducted and stockpiles will be placed separately for use during rehabilitation. Non-carbonaceous rock from the pit will be removed and stored in a temporary stockpile, from where it will be returned to the pit. No coal stockpiling will occur on the southern Klipfontein Section, however an existing coal stockpile is located in the northern Klipfontein Section.

The Klipfontein Section's mine potable water requirements are limited to small volumes required for ablution facilities and human consumption and this water is pumped from Middelburg Colliery. A cement dam provides wash-down water for the conveyor system. When this dam is not functional, clean water is used. Other mine water requirements are limited to water required for dust suppression of haul roads and washing of vehicles and machinery in designated wash bays. The required demands will be met from the pollution control dams. Water required for haul road dust suppression and washing will be obtained from one of the pollution control dams (the infrastructure dam). No water is required for processing, as this will be undertaken at the existing plant at Middelburg Colliery's North Section.

All industrial and domestic waste will be removed to a registered waste management facility.

All personnel will be accommodated in Middelburg and/or Witbank. On-site hostels or other facilities (such as recreational) will not be constructed.

3.6.5 Decommissioning / Closure Phase

The decommissioning and closure of the southern Klipfontein Section will occur with the decommissioning of the mine in accordance with the EMPR and any other closure plans pertaining to mine infrastructure and facilities.

3.7 Overall Project Schedule

The estimated overall project schedule is as follows:

- Project concept and drafting of Environmental Authorisations: 2014
- Authorisation (EIR, EMPR, IWULA amendments): Approximately 1 year
- Closure of road D253: Once authorisation has been received
- Mining commences: Once authorisation has been received
- Operations / Life-of-Mine (LOM):– Approximately 10 years (presumed end date Financial Year 2026)

4. RECEIVING ENVIRONMENT

4.1 Introduction

This section provides a general description of the environment in which the proposed project will be located. The purpose of this section is to provide a perspective of the local environment within which the proposed additional mining area will exist and operate, with

a view to identify sensitive issues/areas, such as affected communities, wetlands or other ecological aspects, which need to be considered when conducting the impact assessment and designing the various components of the project.

During this Scoping Phase, existing baseline information has been used to describe the pre-activity environment. This information has been obtained from previous studies conducted in the surrounding areas. These studies are listed below:

- Jones & Wagener (2000): Environmental Management Programme Report for Klipfontein Section, Middelburg Mine. Report Number: JW132/00/6847
- Jones & Wagener (2006): Amendment to Environmental Management Programme for Middelburg Mine North and South Sections, Mpumalanga. Report Number: JW84/06/A591
- Wet-Earth Eco-Specs (2014): BHP Billiton: Klipfontein Wetland Assessment (Draft)
- Information from BECSA in the form of written and spoken communication and informal documents.

For the EIR/EMPR report, this information will be updated using the specialist studies conducted for this project, to include more site specific information on the receiving environment as well as any sensitivities that have been identified.

4.2 Bio-physical Environment

4.2.1 Climate

The Klipfontein Section is located in the Highveld climatic region. This is a summer rainfall region with most rainfall usually occurring from October to March. The regional climate for the Klipfontein area can be described as a temperate climate with warm summers and cold winters with sharp frost.

4.2.1.1. *Temperature and Evaporation*

The mean daily maximum temperature for this region is approximately 27.2 degrees Celsius (°C) in January (mid-summer) and 18.4 °C in July (mid-winter). The average daily minimum temperature is 13.7 °C in January and -1.7 °C in July (**Table 4-1**).

For the particular catchments in which the study site is situated, the mean annual S-Pan evaporation is approximately 1500-1600 millimetres (mm), while the mean annual A-Pan evaporation is approximately 1800-2000mm (Middleton & Bailey, 2009). Data specific to the area however, shows that the average A-pan evaporation at Bethal is about 1729 mm per annum, almost 2.5 times the annual rainfall (**Table 4-1**). Humidity during the day is low, increasing slightly as the temperatures cool at night. The highest average monthly evaporation, experienced in December, is equivalent to a mean daily evaporation rate of 6.4mm. The rate drops to 2.7mm per day in June (**Table 4-1**).

Table 4-1: Summary of climatic conditions recorded at Middelburg, Belfast, Carolina and Bethal weather stations.

MONTH	MEAN MONTHLY TEMPERATURE (°C)	AVERAGE DAILY TEMPERATURE (°C)		EVAPORATION A-PAN (mm)
		Max	Min	
January	20.5	27.2	13.7	180
February	20.1	26.8	13.4	153
March	18.7	26	11.4	150
April	15.7	23.9	7.4	111
May	11.7	21.3	2.2	94
June	8.3	18.5	-1.8	81
July	8.3	18.4	-1.7	90
August	11.1	21.4	0.8	135
September	14.7	24	5.3	176
October	18	26	10.1	191
November	19	26.2	11.8	170
December	20.1	27.1	13.2	198

Long-term monthly average temperature data for various stations within the region have been sourced. The historic mean, maximum and minimum temperatures for the region are given in **Table 4-2**.

Table 4-2: Long-term maximum, minimum and mean monthly temperatures (°C) for various stations within the region.

STATION		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ANNUAL
Middelburg (1904-1950)	Max	27.2	26.8	26.0	23.9	21.3	18.5	18.4	21.4	24.0	26.0	26.2	27.1	23.9
	Min	13.7	13.4	11.4	7.4	2.2	-1.8	-1.7	0.8	5.3	10.1	11.8	13.2	7.1
	Mean	20.5	20.1	18.7	15.7	11.7	8.3	8.3	11.1	14.7	18.0	19.0	20.1	15.5
Bethal (1904 – 1984)	Max	25.8	25.4	24.5	22.1	19.6	19.9	17.1	20.1	23.1	24.5	24.5	25.4	22.5
	Min	13.2	13.0	11.4	8.1	3.8	0.0	0.2	2.9	6.5	9.9	11.4	12.7	7.7
	Mean	19.5	19.2	18.0	15.2	11.7	8.4	8.6	11.5	14.8	17.2	18.0	19.0	15.1

4.2.1.2. Precipitation

The area falls within the summer rainfall zone, with a mean annual average rainfall of approximately 700mm (Middleton & Bailey, 2009). Precipitation occurs as showers and thunderstorms, falling from October to April, with the highest amount of rainfall occurring from November to January. The winter months of June, July and August are dry and their combined rainfall comprises approximately 3% of the total annual precipitation.

The proposed mine is within a zone of the Highveld Climatic Region characterised by hail storms with incidences of between 4 and 7 per area per year. This area has the highest hail storm frequency in South Africa.

Long-term monthly rainfall days for various stations within the region are given in **Table 4-3**.

Table 4-3: Long-term monthly rainfall days of measurable data (>0.1mm) as a percentage for various stations within the region.

STATION	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ANNUAL
Middelburg (1904 – 1950)	14	11	9.5	6.5	2.9	1.5	1.7	0.9	3.7	8.3	13	13	86.1
Bethal (1904 – 1984)	13	9.1	8.6	7.2	3.2	2	1.8	2.2	3.7	9.4	13	12	85.3

In addition, rainfall has been collected at a mine near to the Klipfontein Section. Mean monthly rainfall obtained from the Vandyksdrift weather station (0478546), over a period of 90 years (1906 to 1996) is presented in **Table 4-4** below. The average rainfall per year is ± 682 mm, with the higher rainfall months occurring from October to March (summer).

Table 4-4: Mean monthly rainfall (mm) at Vandyksdrift.

Month	Mean Rainfall (mm)
January	116
February	96
March	77
April	41
May	16
June	7.7
July	6.9
August	8.5
September	23
October	74
November	108
December	109
TOTAL	682

4.2.1.3. Wind

The mean monthly wind directions and wind speeds for Witbank for the year 2012 are given in **Table 4-5**.

Table 4-5: Mean monthly wind direction and wind speed for Witbank, 2012.

(www.windfinder.com)

MONTH OF YEAR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ANNUAL AVERAGE
Dominant Wind Direction	←	←	↖	↖	↖	↖	↖	↖	↗	↗	↘	↘	←
Average Wind Speed (m/s)	3.6	3.1	3.1	3.1	3.1	3.1	3.1	3.1	5.1	4.1	4.1	3.1	3.1

Figure 4-1 indicates the seasonal wind conditions for Witbank for the period 1998 to 2004. The predominant wind directions for the period are northerly, easterly and east-south-easterly with a >10% frequency of occurrence. Winds from the north-easterly and south-westerly sectors are comparatively infrequent, occurring for less than 5% of the

total period. On average, 11.5% of the time, calm conditions (wind speeds < 1 metre per second (m/s)) occur.

Northerly flows frequently dominate day time conditions with an occurrence of less than 15%. During the night time, an increase in easterly and east-south-easterly flow can be detected with a decrease in northerly air flow.

During summer months, winds coming from an easterly and east-south-easterly direction become more frequent, because of the southerly movement of the Intertropical Convergence Zone (ITCZ). This causes a strengthening in the influence of the tropical easterlies and an increased frequency of occurrence of ridging anticyclones off the east coast. During the winter months, the frequency of winds from the north-westerly and westerly sectors increases, as a result of the prefrontal and postfrontal circulation respectively. There is a noteworthy increase in the frequency of calm conditions (wind speeds < 1 m/s) during the winter months to 15.1% (see **Figure 4-1**).

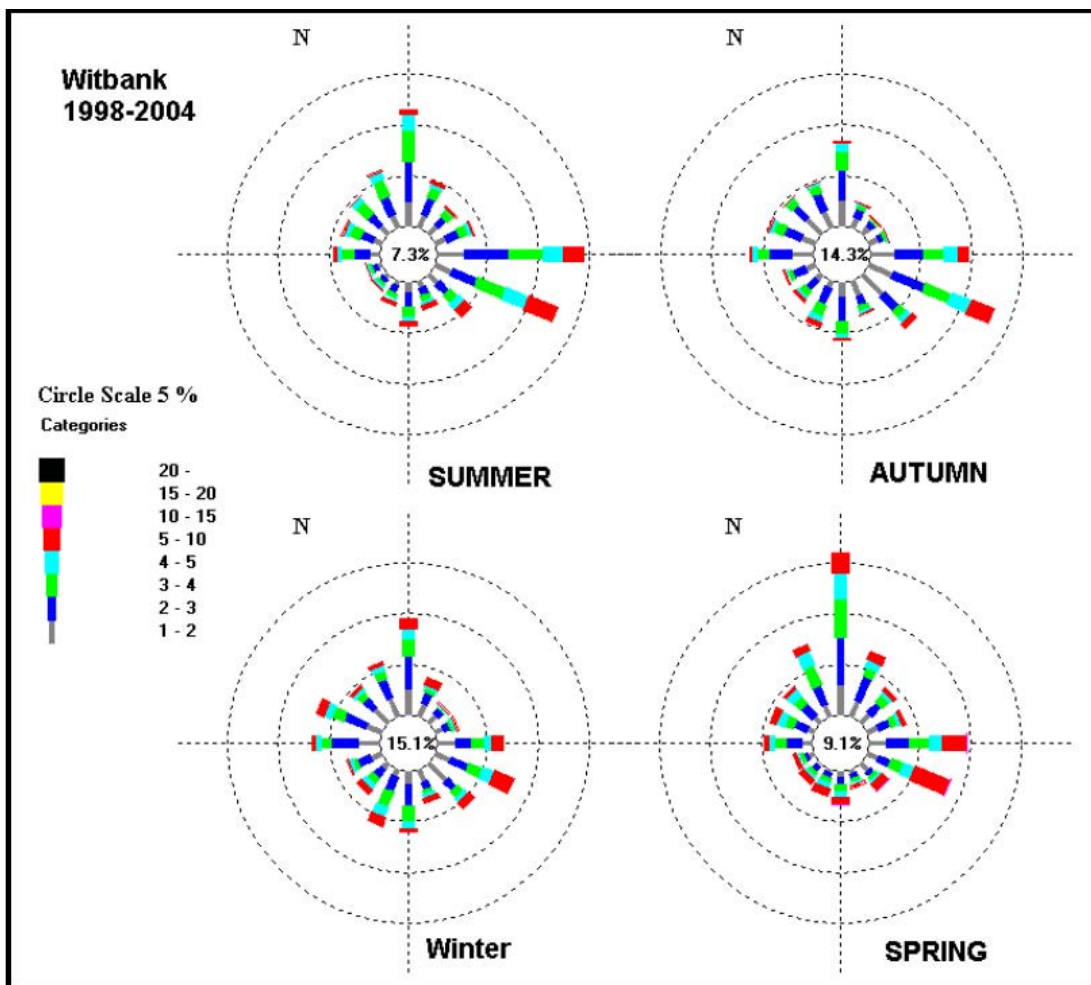


Figure 4-1: Seasonal wind roses for Witbank, recorded for the period 1998-2004.

(Watson, 2006).

Figure 4-2 indicates the wind direction and distribution for Witbank for 2012. The predominant wind directions for the year are westerly and east-south-easterly. Once again, this correlates with summer months experiencing easterly winds due to the southwards movement of the ITCZ and winter months experiencing strong westerly winds due to postfrontal circulation.



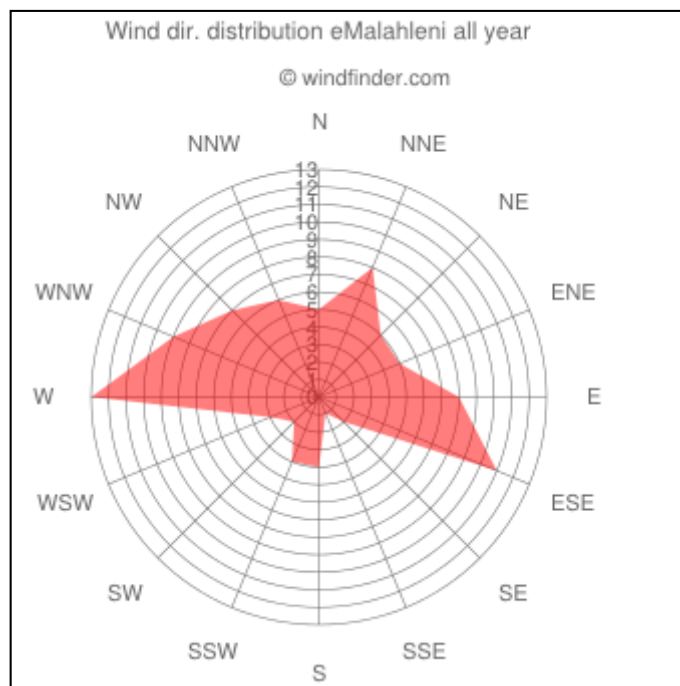


Figure 4-2: Wind direction and distribution for Witbank, 2012. (www.windfinder.com)

4.2.2 Geology

The Middelburg Colliery mineral rights area occurs in the Witbank Coalfield in the Mpumalanga province. The Witbank Coalfield is situated in the northern part of the main Karoo Basin. A felsite pre-Karoo ridge (the Smithfield ridge) forms the southern limit of the Coalfield. The coal bearing strata in the Witbank Coalfield are contained within the Vryheid Formation of the Ecca Group. The Vryheid Formation consists of alternating sandstones and shales ranging from coarse to gritty sandstones to shales with all the intermediate variations between the two extremes.

Coal deposition in the Middelburg Colliery area was largely controlled by the glacial pre-Karoo topography. This undulating floor strongly influenced the sedimentation patterns and extent of the different coal seams. Because of dolerite dykes and sills of the Drakensberg Formation intruding into the geology, some of the sedimentary strata have been tilted or displaced. Thick coal deposits were formed in the deeper parts of the basin while the coal seams thinned rapidly towards the basin edge.

Existing borehole data of the area has revealed the existence of eleven coal seams associated with the sediments of the Vryheid Formation. Seams are numbered 1 to 5 with 5 Seam being the top seam in the sequence. Seams preserved in the area are the 5 Seam, 4 Upper A Seam, 4 Upper Seam, 4 Lower Seam, 3 Seam, 2 Upper Seam, 2 Seam, 2 Lower Seam, 2A Seam, 1 Seam and 1A Seam (**Figure 4-3**).



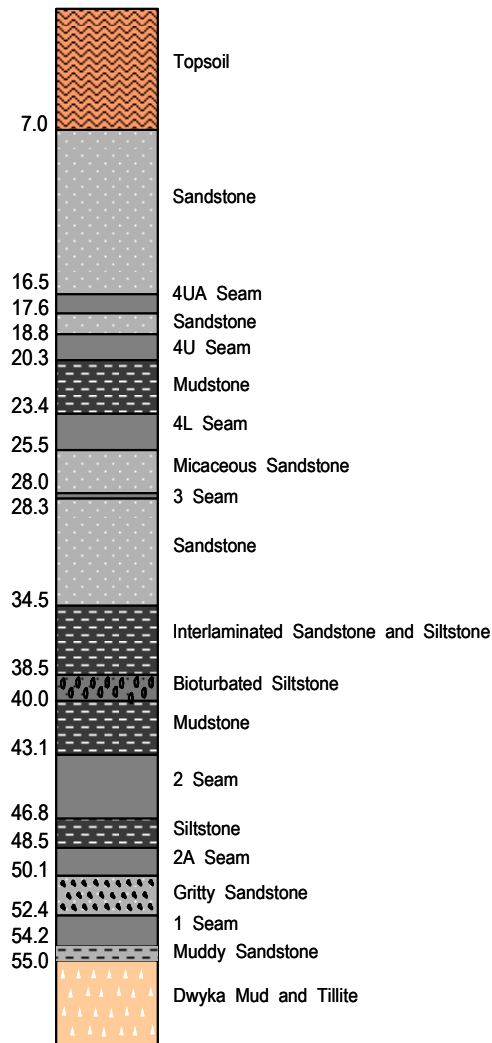


Figure 4-3: Generalised lithological column of the resource area.

4.2.3 Topography and Drainage

The proposed mine area is characterised by open gently rolling to flat topography typical of the Highveld. This relatively flat and undulating topography is typical of the Mpumalanga region. This topography gives rise to some distinctive features, such as the marshy areas and pans in the depressions, as well as perennial streams and dams. The elevation of the land ranges from 1600 -1640 metres above mean sea level (mamsl). The Spookspruit drains the southern Klipfontein Section and is the lowest point in the area.

4.2.4 Soils

The Klipfontein Section is overlain by soils of the Hutton (Hu), Clovelly (CV), Griffin (Gf), Avalon (Av), Bainsvlei (Bv), Pinedene (Pn), Bloemdale (Bd), Glencoe (Gc), Dresden (Dr) and Westleigh (We) Forms.

Usually, the Hutton and Clovelly soil forms have average rooting depths of between 500mm and 800mm, while the Pinedene, Avalon and Bainvlei soil forms have average depths of between 400mm and 700mm. The shallow hydromorphic (in the presence of constant excess water) soil forms (Westleigh, Longlands and Katspruit) have shallower average root depths of between 300mm and 500mm.



Soil distribution on a site is closely associated with the topography and parent materials from which the soils result. The free-draining soils (Clovelly, Hutton and Griffin) are mostly derived from the sediments (sandstones and shale's) of the Ecca Group, while the more structured and clay rich soils are associated with the intrusive dolerite dykes and sills forming part of the areas geology. Finally, the heavier, dark grey or mottled clay-rich colluvium and hydromorphic soils are found in the low lying, gently sloping stream and riverine environments.

4.2.5 Surface Water and Wetlands

The region where the project is situated falls within the Olifants Water Management Area (WMA) and the Olifants River catchment. Thirty large dams exist within this catchment and smaller dams are also present. The main aquatic ecosystems associated with the study area are the Spookspruit and the Vaalbankspruit.

The Olifants River Catchment is of considerable economic importance as a significant number of mining, industrial and agricultural activities (including intensive irrigation schemes) are concentrated within the catchment. This catchment is a principal sub-catchment of the Limpopo River and covers an area of approximately 54 570 km² within the eastern parts of South Africa (DWAF, 2004).

The Olifants River originates to the east of Johannesburg and flows north, before curving eastwards through Mpumalanga and the central Kruger National Park to Mozambique, where finally it discharges into the Indian Ocean. Economic activity in the catchment is diverse, ranging from mining and industry to agriculture and eco-tourism. As the Olifants River runs through the Kruger National Park, the provision of water to meet ecological requirements is also an important water management requirement of the WMA (DWAF, 2004).

The study area is located in the Spookspruit Catchment (Quaternary Catchment B11H), on the watershed between the Spookspruit and the Vaalbankspruit (B12D) and on the Watershed between the Vaalbankspruit and the Klein Olifants River (B12B).

According to the National Freshwater Ecosystem Priority Areas (NFEPA) classification, the wetlands in the area consist mostly of depressions (pans) and seeps with wetland clusters associated within the western part of the Spookspruit Catchment, suggesting that the area may be of some importance for wetland conservation in the Eastern Highveld.

4.2.6 Groundwater Occurrence and Use

The groundwater studies conducted for the original Klipfontein EMPR identified that the groundwater levels are closely associated with the depths of the coal seams. Two prominent water tables were observed; firstly a shallow water level, rarely deeper than 10 metres below ground level, and secondly, a deeper water level which varies from 15 metres to 40 metres below ground level.

A hydrocensus was also undertaken in the previous study with an average borehole yield of 0.9 litres per second (l/s) obtained from the hydrocensus. The yields of the springs varied from 0.1 l/s to 2.0 l/s with an average yield of 0.8 l/s.

The ambient groundwater quality of the area is considered good, with most parameters meeting the recommended limit given in the water quality guidelines for Domestic use.

The primary use of groundwater in this area is the provision of drinking water for humans and livestock.

4.2.7 Land Use and Agricultural Potential (Land Capability)

Land use in the study area is confined to the cultivation of maize on the deeper well-drained sandy loams of the upper and upper-midslopes, grazing on the lower midslopes on the shallower soils and moderate to deep poorly drained soils. The shallow wet based soils (usually utilised for grazing) and wetland areas have to date been left to natural grasslands.

Surveys conducted by the Chamber of Mines' classification system indicated that the Klipfontein Section covers land at present rated from an agricultural point of view as very good to good on the upper and upper-midslopes, and poor to very poor, on the low lying riverine areas and wetlands.

4.2.8 Terrestrial Floral Biodiversity

The region in which the proposed mine extension and route alternatives are to be located falls within the Grassland Biome. The Grassland Biome boasts a high biodiversity, second only to the Fynbos Biome. At a finer scale, the study area is situated in the Eastern Highveld Grassland. The Eastern Highveld Grassland covers an area of approximately 15 547km². This type of grassland is usually dominated by grasses such as *Eragrostis plana*, *E. curvula*, *Heteropogon contortus*, *Trachypogon spicatus* and *Themeda triandra*. Although forbs or shrubs are not abundant in grasslands, many species do occur in this area (Mucina & Rutherford, 2006).

The vegetation in the surrounding area is probably the eastern variety of Acocks Veld Type 61 (Bankenveld) which has been renamed to Loskop Thornveld (SVcb 14) and Loskop Mountain Bushveld (SVcb 13) (Mucina & Rutherford, 2006). This veld type is called a "False" type and is classified in this way because it is highly altered from its original form (due to human influences) that its true character can no longer be recognised. It has however been suggested that the area may have been an open *Acacia caffra* savanna (Acocks, 1988).

Many protected and Red Data floristic species can be found in this vegetation type. The Eastern Highveld Grassland is a vegetation type that is classified as an endangered ecosystem. This ecosystem has received this classification because of the high species diversity found within it and because it is in an area threatened by anthropogenic (human induced) influences such as mining. Today 45% of this vegetation type remains and 0.67% is protected (Mucina & Rutherford, 2006). Because the grassland area in which the proposed mine is to be expanded is largely fragmented by agriculture and mining already, river systems and wetlands play an important role in connecting these grassland fragments.

Existing biodiversity studies at Klipfontein state that presently, most of the area is under some form of agricultural use. The only areas that it is assumed have not yet been ploughed are the low-lying areas of the watercourses, which are not suited for agricultural purposes. These areas are not fenced off, resulting in them having been used as grazing lands, causing degradation of the natural vegetation. There is no evidence of indigenous woody vegetation in the study area. The woody species present are exotic (blue gums and wattles, etc.) which would have been planted as ornamental trees in gardens, along roads, or to form wind breaks. There have also been woodlots of old trees found in the area, probably intended for firewood or fencing poles.

4.2.9 Terrestrial Faunal Biodiversity

Within the Highveld, grasslands provide a habitat for certain rare or threatened faunal species such as the Giant Bullfrog (*Pyxicephalus adspersus*) and the Grass Owl (*Tyto capensis*).

Because of the drastic changes that have taken place in the vegetation and topography of this region, and because most of the surrounding area is transformed, it is apparent that the indigenous fauna may have been reduced. Mammals, reptiles, birds, fish and invertebrates specific to the area will be discussed in the EIA phase, after the site survey has been conducted.

4.2.10 Aquatic Biodiversity

In the previous studies undertaken at Klipfontein, it was found that the system of open water streams and wetland supported the largest diversity of animals. The presence of a Crowned Crane pair, together with other birds of conservation concern, was noted. The aquatic fauna was reasonably healthy, however did show signs of impact, such as fine sediment from agricultural activities.

Many wetlands in the area have been disturbed through grazing or have been diverted to allow for continued mining. A number of pans have already been mined out.

An aquatic ecology survey for the proposed area is proposed to be undertaken for the EIA phase of this project.

4.3 Socio-Economic Environment

4.3.1 Social Setting

Administratively, the Mpumalanga Province is divided into three district municipalities, which are comprised of 20 local municipalities. Klipfontein Section of the Middelburg Colliery falls within the Steve Tshwete Local Municipality which falls within the Nkangala District Municipality. The Steve Tshwete Local Municipality consists of 29 wards. The Klipfontein Section of the Middelburg Colliery falls within Ward 6.

The existing Middelburg Colliery employs people mainly from Middelburg, Witbank and surrounding areas. Employment opportunities with the expansion of the opencast mining at the southern Klipfontein Section of this mine will be prolonged with the possibility of a few new short-term employment opportunities during the construction phase.

The major economic activities in Middelburg are steel industries, coal mining, agriculture, commerce and light engineering such as automobile and machine mechanics, construction of small scale structures and manufacturing of small appliances, food and clothing. The towns of Middelburg and Witbank generally have good standards of social infrastructure. Both towns have high schools and hospitals, as well as expanding commercial facilities, police stations and extensive civil administration structures.

The community, social and cultural status described hereunder refers to the Steve Tshwete Local Municipality (STLM) as a whole, as this is the immediate area affected by the proposed project.

According to the 2011 Census, the population of the STLM was in the region of 229 831 people in the year 2011. The average population growth rate was calculated to be 4.76% from 2001 to 2011, which is substantial and inevitably puts strain on the resources, services and infrastructure of the area.

71% of the population is of employment age with approximately 89.5% of the community residing in urban areas. The provision of community educational facilities is well distributed; however there is only one Further Education and Training College (STLM, 2012). 19.7% of economically active people in the municipality are unemployed, with

7.4% having never attended school and 35% having graduated with a Matric certificate (StatsSA, 2011).

The Census study revealed that 90.8% of the households have access to electricity for lighting (StatsSA, 2011). The remaining households rely on other sources of energy such as wood, coal, gas or paraffin (STLM, 2012). The reliance on these other sources of fuel contributes significantly to air pollution. Providing extra coal to the area, as the proposed expansion of opencast mining intends would improve the quantity of electricity available.

Of the 64 971 households in the area, 44.5% are owned or being paid off (StatsSA, 2011). Most of the households in the area are a brick structure on a separate stand or yard and the next highest percentage (11%) are informal dwellings. The remaining households comprise traditional dwellings, flats, clusters, caravans, houses or informal dwellings in a back yard, rooms in shared dwellings or boats (STLM, 2012).

The 2011 Census found that while 27.8% of the STLM population speaks Zulu and 22.1% speak Afrikaans, Afrikaans is the dominant language in the town of Middelburg. Other languages spoken in the area are Southern Ndebele and Northern Sotho (StatsSA, 2011). The racial makeup of the STLM area is grouped as follows: 73.6% Black/African; 21.8% White; 2.6% Coloured; 1.6% Indian/Asian (StatsSA, 2011).

4.3.2 Visual Aesthetics

Currently, the proposed mining area's surrounding visible land uses mainly consist of agriculture (croplands and grazing lands) and mining.

There is limited compatibility between the area's mining activities and the surrounding natural landscape. The existing topography is relatively flat, with few hills or natural vegetation to hide mining activity. Current visible mining activities in the area (from the Middelburg Mine and Klipfontein Section, include dams, plant and associated infrastructure, and stockpiles. The proposed mine extension is however located away from tourist routes.

4.3.3 Traffic

A Regional Route that is in the vicinity of the proposed mine and may be affected by the project is the R35. The R35 runs in a north-south direction to the west of the proposed mining area.

A provincial road, the D253, is proposed to be partially closed to allow for the proposed opencast mine. Because of this partial road closure, deviations are necessary. Either existing roads in the area are proposed to be upgraded or a new road constructed.

4.3.4 Noise

According to South African National Standards (SANS 0328 – 2001), Methods for Environmental Noise Impact Assessments, the development of a mine or industry within 1 000m of a Noise Sensitive Area may have acoustical implications. Noise control regulations state that no person may make, produce or cause a disturbing noise, or allow it to be made, produced or caused by any person, machine, device or apparatus or any combination thereof. Disturbing noise is defined as a noise level which exceeds the acceptable zone level, or if no zone level has been declared, a noise level exceeding the residual sounds level by 7dBA or more.

For this noise zone (rural), noise level of 45 dBA during the day (06h00 to 22h00) and 35 dBA during the night (22h00 to 06h00) is not to be exceeded.

4.3.5 Air Quality

The existing sources of atmospheric emission which occur in the vicinity of the proposed expansion project include:

- Middelburg Mine North and South coal mining operations;
- Other mining operations, including: Black Wattle Colliery (immediately north of the Goedehoop mine lease area), existing Klipfontein mining operations (west of Hartbeestfontein mine lease area) and Boschmanskrans mining operations (south of Driefontein mine lease area);
- Duvha Power Station and its associated ash dump; and
- Other potential sources of emission include household fuel combustion, veld burning, windblown dust from open areas, agricultural activities, vehicle tailpipe emissions and road dust entrainment along paved and unpaved roads in the area.

Sources of atmospheric emissions at the existing Middelburg opencast coal mining operation and at the neighbouring collieries include:

- Fugitive dust from blasting, drilling, materials handling (overburden, interburden, waste rock, coal, discard), vehicle entrainment, wind erosion, tipping, crushing and screening;
- Fugitive dust from North and South beneficiation plants;
- Sulphur dioxide, nitrogen oxide and carbon monoxide emissions from blasting operations; and
- Potential sulphur dioxide and volatile organic emissions from the spontaneous combustion of discard dumps.

4.3.6 Blasting and Vibrations

There are suspected blasting and vibrational impacts existing in the vicinity of the proposed Klipfontein mining extension. These are most likely due to the current opencast mining operations of the Klipfontein Section. A blasting and vibrations survey and impact assessment will be undertaken in the EIA phase of this project.

4.4 Cultural Environment

4.4.1 Historical Setting and Significance

The Mpumalanga Province has a rich heritage, comprised of remains dating from the pre-historical to the historical (or colonial) periods of South Africa. Pre-historical and historical remains in the Mpumalanga Province therefore form a record of the heritage of most groups living in South Africa today. Various types and ranges of heritage resources that qualify as part of South Africa's 'national estate', as outlined in Section 3 of the National Heritage Resources Act (No. 25 of 1999), occur in the Mpumalanga Province.

The most common heritage resources which occur in the immediate area include:

- Historical remains associated with farmstead complexes consisting of houses, associated outbuildings, cattle enclosures and graveyards.

- Abandoned graveyards left by farm workers who moved from farms to urban areas.

Previously, gravesites have been found on the Klipfontein Section of Middelburg Colliery. There are two known gravesites within the Klipfontein area. The first is a single grave that is located along a power line route. The second, consisting of 12 graves, was located within the Rondeboschje pollution control dam basin, but has subsequently been relocated. The southern Klipfontein Section, where this project is proposed to take place, has not been surveyed in detail in previous studies. This area will be surveyed by a heritage specialist and the information included in the EIA phase of this project.

5. ALTERNATIVES CONSIDERED

5.1 Introduction

In terms of the EIA regulations consideration must be given to alternatives. Alternatives are different approaches and ways of meeting the need, purpose and objectives of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, processes or technology alternatives, temporal alternatives, etc. The no-go alternative or option is also considered, as it provides the baseline against which the impacts of other alternatives may be compared. The objective of presenting, evaluating and motivating the feasible alternatives during the Impact Assessment Phase, is to identify the preferred option.

For this project, several alternatives have been considered. These are outlined below.

5.2 Mine Plan Alternatives

Mine plan alternatives are yet to be finalised, but will be presented and assessed in the EIA phase of this project. The proposed extension of opencast operations at Klipfontein is indicated in **Figure 5-1**. The mine plan alternatives will be identified by means of input from specialist reports.

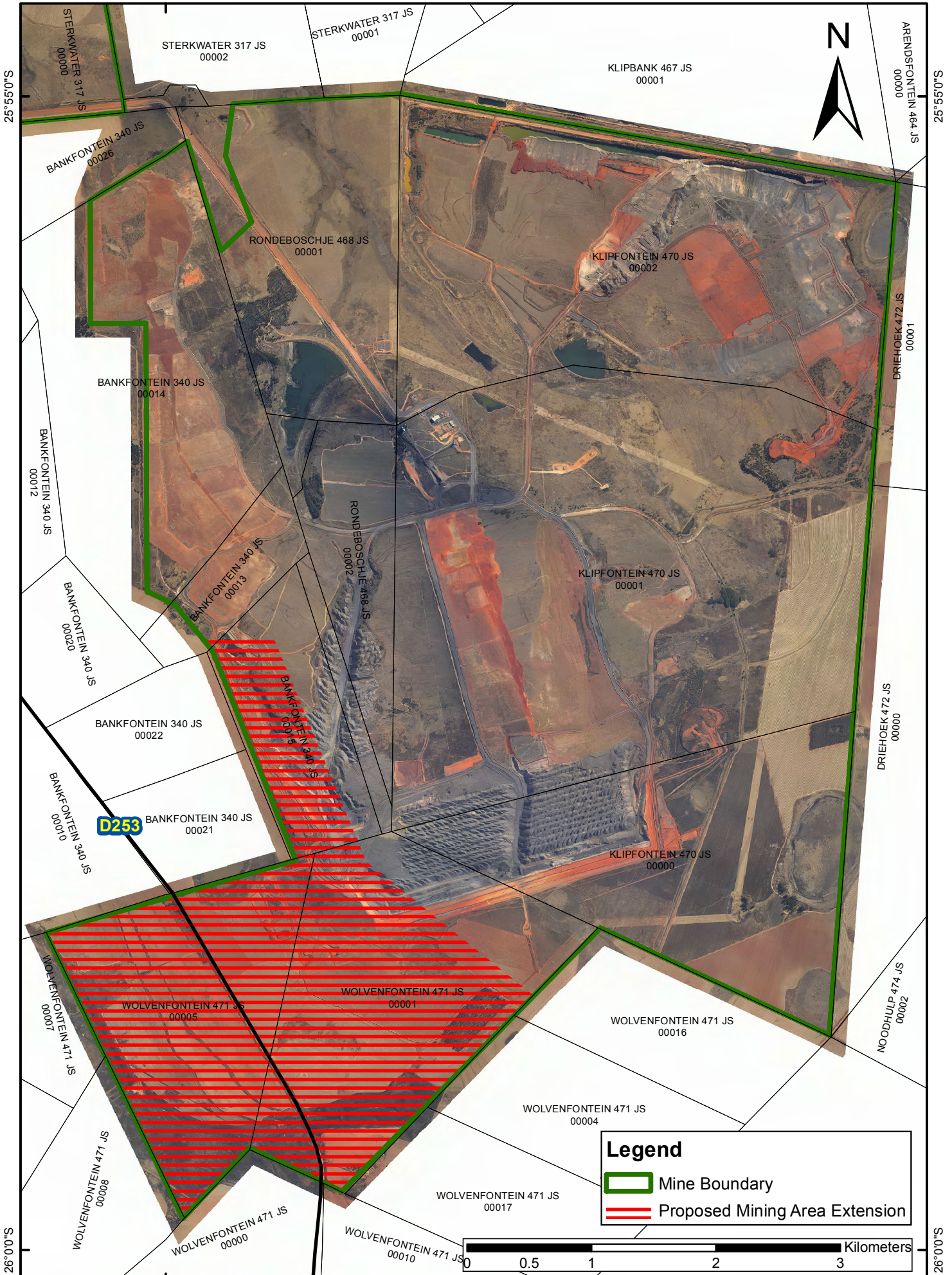
5.3 Road Route Alternatives

A section of the D253 road traverses across BECSA's Klipfontein Section mining rights area, which has been set aside for the proposed future opencast mining of the southern Klipfontein Section. It has been determined that for the proposed opencast mining to be viable, this portion of the road requires partial closure and must be diverted to afford the users of the road access to adjacent farm portions (**Figure 5-2**).



For this FSR, it is anticipated that the proposed road diversion will be positioned around the perimeter of the mining rights area and be designed and constructed to the applicable standards and specifications. The diversion will remain a gravel road, constructed to similar specifications as the current D253 Road.

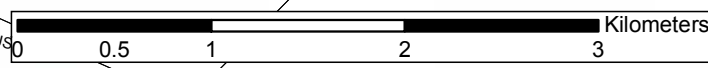
These road route alternatives will be further assessed and the number of options will be reduced to those most viable. This will be done with the input of landowners and other current road users, as well as engineering feasibility studies. Only viable road route alternatives will be taken forward in the EIA phase of this project.

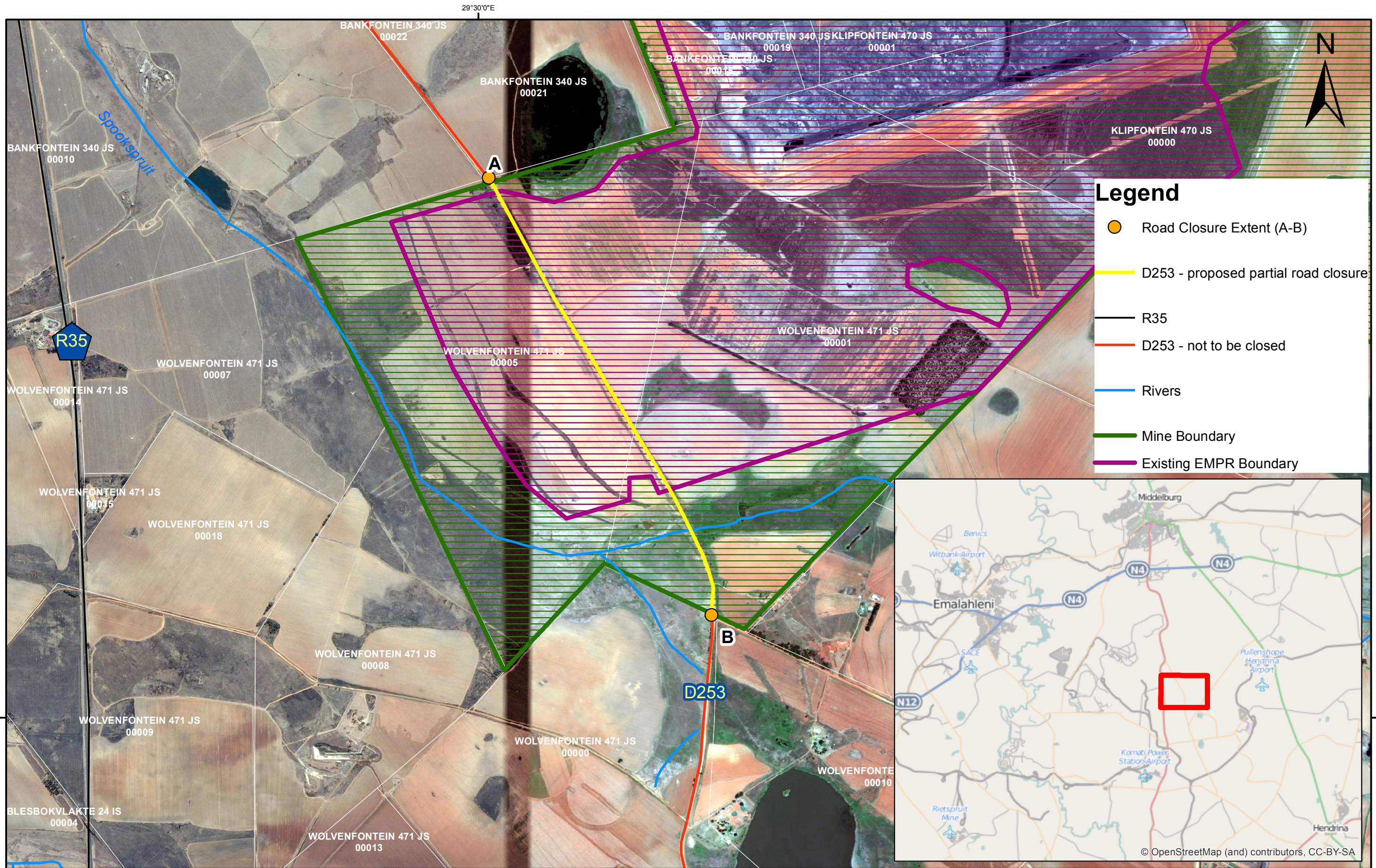
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Legend

-  Mine Boundary
-  Proposed Mining Area Extension





5.4 No-Go Alternative

The current land use where the opencast mining extension is proposed to occur is mainly agriculture and current opencast mining operations. The no-go option (i.e. the proposed opencast mining not being implemented) will result in the continuation of such land use on the site. Although economically viable, the continuation of agriculture and current mining operations will not provide the amount of economic growth to the area that mining would offer. Benefits include sustained job opportunities for BECSA's employees and greater economic input into the area allowing increased development. In addition, the majority of South Africa's electricity generation is as a result of the burning of coal. The national electricity utility that generates and distributes electricity to industrial, mining, commercial, agricultural and residential consumers and re-distributors is Eskom. Currently, Eskom relies on coal fired power stations to produce in the region of 95% of the electricity generated in South Africa. Until such time as alternative energy generation options may be executed on a large enough scale, Eskom is largely dependent on coal mining in order to supply electricity to the grid.

Not proceeding with the proposed project is therefore not a desirable option in this case as it proposes that the coal reserves underlying the project area not be utilised. This will decrease the volume of coal available to use in coal fired power stations. Not proceeding with the proposed project will also hamper revenue generation, economic activity, skills development and employment opportunities. If the proposed project were not to go ahead the current land uses and economic activities would continue as at present (and decrease upon the closure of the mine once the current reserves have been depleted).

5.5 Conclusions and Recommendations

In conclusion, it is recommended that the specialist findings be utilised to advise the alternatives and that the alternatives be investigated in further detail in the next phase of the project once more information is available.

6. SCOPING METHODOLOGY

6.1 Technical Process

For the Scoping Phase of this S&EIR and EMPR process, the following technical process has been followed to date:

6.1.1 Consultation with Client

On notification and receipt of the appointment letter from BECSA, a project inception meeting was held on 10 January 2014 between BECSA and the J&W Project Team. During this project kick-off meeting the following was discussed:

- Project Scope and Requirements;
- Project Schedule;
- Identification of key stakeholders and role players; and
- Analysis of the preliminary road route alternatives.

6.1.2 Consultation with authorities, application forms and landowner notification

The MDEDET EIA application form (**Appendix A-1**) for the proposed project was submitted to the MDEDET on 7 March 2014.

Existing I&AP databases, developed through previous projects in the area, were used for initial project notification and groundtruthed by the J&W team to identify additional I&APs. The list of potentially affected landowners is attached as **Appendix B-1** of this report. During the Scoping Phase the list of landowners were confirmed and landowner notification forms (**Appendix B-2**) were signed.

6.1.3 Site Visit

A site visit was conducted on 10 January 2014 with the objective of familiarising the project team with the area.

6.1.4 Scoping Report

The Draft Scoping Report (DSR) was prepared with information and issues identified during the Scoping Phase activities. The DSR was updated with comments from a key commenting authority and comments obtained from I&APs during public review to a Final Scoping Report (FSR) and is being submitted to the MDEDET and the DMR for acceptance and approval to proceed to the next phase of the project.

6.2 Public Participation

Public participation is an essential and legislative requirement for the environmental authorisation process for which BECSA has applied. The principles that demand communication with society at large are best embodied in the principles of the NEMA (Act 107 of 1998, Chapter 1), South Africa's overarching environmental law. In addition, Section 24 (5), Regulation 54-57 of GNR 543 under the NEMA, guides the public participation process that is required for an EIA process. The public participation process followed for the EIA process integrates the requirements for public participation for the following applications for the proposed developments:

- Environmental authorisation in accordance with the NEMA EIA regulations of 2010;
- Application for an IWULA in terms of the provisions of the National Water Act (Act 36 of 1998); and
- Compilation of an EMPR in terms of the MPRDA (Act No. 28 of 2002), as amended.

6.2.1 Objectives of public participation in an environmental authorisation process

The objectives of public participation in an environmental authorisation process are to provide sufficient and accessible information to I&APs in an objective manner so as to:

6.2.1.1. *During Scoping:*

- Assist the I&APs with identifying issues of concern, and providing suggestions for enhanced benefits and alternatives;
- Provide I&APs with an opportunity to raise issues of concern and suggest project alternatives; and

- Verify that their issues have been considered and to help define the scope of the technical studies to be undertaken during the Impact Assessment Phase.

6.2.1.2. *During Impact Assessment:*

- Verify that their issues have been considered either by the Specialist Studies, or elsewhere; and
- Comment on the findings of the EIA including the measures that have been proposed to enhance positive impacts and reduce or avoid negative ones.

The key objective of public participation is to ensure transparency throughout the process and to promote informed decision making.

6.2.2 Methodology

The public participation process for the applications has been designed to satisfy the requirements laid down in the applicable legislation and guidelines. This section of the report highlights the key elements of the public participation process to date.

6.2.2.1. *Application forms and notification letters:*

An EIA application was submitted to the MDEDET on 7 March 2014. The application form was acknowledged by the MDEDET 13 March 2014 with the following reference number: **17/2/3N-349**.

6.2.2.2. *Identification of stakeholders*

The identification of stakeholders is ongoing and is refined throughout the process. The identification of key stakeholders and community representatives (land owners and occupiers) for this project is important as their contributions are valued. Various stakeholders were identified as part of the EIA process, this included the following:

- Affected and surrounding land owners,
- Organs of State (national, provincial and local);
- Local business and interests;
- Media;
- Non-governmental Organisation (NGOs); and
- Community Based Organisations (CBOs).

According to the NEMA EIA Regulations under Section 24(5) of NEMA, a register of I&APs (Regulation 55 of GNR 543) must be kept by the public participation practitioner. Such a register has been compiled and is being kept updated with the details of I&APs throughout the process, refer to **Appendix B-1** for the I&AP database.

6.2.2.3. *Announcement of opportunity to become involved*

The opportunity to participate in the environmental authorisation processes was announced in February 2014 as follows:

- Distribution of a letter of invitation to become involved, addressed to individuals and organisations, accompanied by a Background Information Document (BID) containing details of the environmental authorisation process, the proposed project and a registration sheet (See **Appendix B-2** for a copy of the documents). The BID was also published on the J&W website. The BIDs were hand delivered to people residing near the proposed Klipfontein Section extension – including landowners that may be directly affected by the proposed closure of the D253 road.
- A media advertisement, (**Appendix B-3**) describing the proposed project and the listed activities which will be triggered by the proposed project, was placed in the Middelburg Observer and Witbank newspapers on 20 March 2014.
- Notice Boards (**Appendix B-4**) were placed in conspicuous places within the vicinity of the D253 road and the local area. Placement of notice boards was conducted on 26 March 2014 to invite stakeholder participation, refer to **Appendix B-4** for proof of placement of notice boards.
- Meetings with potentially directly affected landowners were held on 9 April 2014. Each of these landowners were personally visited and invited to become part of the process to suggest alternatives for the proposed road deviation and to provide comments on the proposed project in general. The discussions held and in summary recorded in the Comments and Response Report (**Appendix B-5**).

6.2.2.4. *Obtaining comment and contributions*

The following opportunities are available during the Scoping phase for contribution from I&APs:

- Completing and returning the registration/comment sheets on which space was provided for comment. Comments sheets were made available with the BID and with the notification of the availability to review the DSR and FSR;
- Providing comment telephonically or by email to the public participation office.

Issues which have been raised thus far have been considered and will be carried forward into the Impact Assessment phase.

6.2.2.5. *Comments and Response Report and acknowledgements*

Issues and comments raised during the Scoping phase have been recorded and addressed in a Comments and Response Report and appended to the FSR (**Appendix B-5**). The report was updated to include additional I&AP contributions received during the public review of the DSR. The Comments and Response Report will be further updated during the Impact Assessment phase. The contributions made by I&APs are being acknowledged in writing.

6.2.2.6. *Draft Scoping Report (DSR)*

The purpose of the public participation process during Scoping is to enable I&APs to verify that their contributions have been captured, understood and correctly interpreted,

and to raise further issues. At the end of Scoping, the issues identified by the I&APs and by the environmental technical specialists, have been used to define the Terms of Reference (ToR) for the Specialist Studies that will be conducted during the Impact Assessment Phase. The availability of the DSR was announced in a letter (post and email) sent out on **Friday 5 September 2014**, and addressed to all individuals and organisations on the stakeholder database.

The DSR, including the Comments and Response Report Version 1, was distributed for comment from **12 September to 22 October 2014** as follows:

- Left in public venues within the vicinity of the project area (**Table 6-1**);
- Placed on the J&W website;
- Mailed (CD copies) to key stakeholders;
- Mailed to I&APs who requested the report in CD format; and
- Copies were made available at the stakeholder meeting/s.

I&APs could comment on the report in various ways, such as completing the comment sheet accompanying the report, and submitting individual comments in writing, telephonically or by email.

Table 6-1: Public places where the Draft Scoping Report was available.

ADDRESS	LOCATION	CONTACT
Printed Copies		
Wanderers Avenue, Middelburg	Gerald Sekoto Public Library	013 249 7314
28 Hofmeyer Street, Witbank	eMalaheni Public Library	013 699 1054
Electronic Copies		
Sibongile Bambisa/ Anelle Lötter	www.jaws.co.za	012 667 4860
	Phone and request a CD copy	012 667 4860

6.2.2.7. Meeting during public review of Draft Scoping Report

A meeting for stakeholders and authorities was held on **Saturday, 27 September 2014** to provide I&APs with an opportunity to comment on the DSR and to meet and interact with the project team. The letter to notify stakeholders of the availability of the DSR for public review also extended an invitation to attend the stakeholder meeting. The attendance register of the public meeting is included in **Appendix B-6**.

6.2.2.8. Final Scoping Report (FSR)

The Final Scoping Report was updated with additional issues raised by I&APs. The document is being distributed to the competent authority and commenting authorities and I&APs who specifically request a copy. I&APs have been notified of the availability of the report for their review. The Final Scoping Report is available for public review for 21 days from **13 November 2014 to 4 December 2014**.

In the Impact Assessment Phase of the EIA, specialist studies will be conducted to assess the potential positive and negative impacts of the proposed project, and to recommend appropriate measures to enhance positive impacts and avoid or reduce negative ones. I&APs will be kept informed of progress with these studies.

7. ISSUES IDENTIFIED

The proposed project is anticipated to impact on a range of biophysical and socio-economic aspects of the environment. The main purpose of the S&EIR and EMPR process is to identify and evaluate the significance of these potential impacts and to determine how they can be minimised or mitigated.

It should be noted that a comprehensive Environmental Management Programme (EMPr) will be developed and implemented to regulate and minimise the direct, indirect and cumulative impacts during the construction and operational phases. The potential environmental impacts identified during the Scoping Phase, which will be investigated further in the Impact Assessment Phase of the project are summarised in **Table 7-1** below.

Table 7-1: Potential Environmental Impacts to be investigated in the impact assessment phase.

ENVIRONMENTAL ELEMENT	POTENTIAL ENVIRONMENTAL IMPACT
Topography and Land Use	<p>Visual Environment</p> <ul style="list-style-type: none"> The proposed mining may alter the visual environment of the area due to the proposed opencast pits and box cuts, as well as the creation of stockpiles and associated infrastructure.
Soil and Land Capability	<p>Soil and Land Capability</p> <ul style="list-style-type: none"> The proposed construction or upgrading of a road may affect the soils and land capability due to compaction of the soil or alteration of agricultural land and/or potentially wetlands to become gravel roads. The proposed opencast mining may affect the soil and land capability due to topsoil stripping, soil stockpiling and weathering. The lengthening of haul roads and the upgrading or construction of access roads may result in vegetation clearing and soil compaction. Hydro-carbon spills from the mine vehicles may occur during handling and transporting of coal, as well as from the maintenance of these vehicles.
Air Quality	<p>Dust Generation</p> <ul style="list-style-type: none"> Dust generation may be a result of the utilisation of the additional / lengthened haul roads and new / upgraded access roads. Blasting may contribute to the generation of dust. Excessive dust may impact negatively on crop production. <p>Carbon emissions</p> <ul style="list-style-type: none"> Carbon emissions may increase as a result of the proposed road deviation and impact negatively on air quality.
Flora	<p>Vegetation Clearing</p> <ul style="list-style-type: none"> The construction or upgrading of roads may result in vegetation clearing, some of which may be important or endangered species or of protected ecosystems. <p>Alien Invasive Species</p> <ul style="list-style-type: none"> The clearing of vegetation often results in an influx of alien invasive plants to the area due to soil disturbance.
Fauna	<p>Faunal Disturbance</p> <ul style="list-style-type: none"> An increase in activity in the area (due to mine workings and new / upgraded access roads) may cause a disturbance to the fauna of the area – noise, traffic, disturbance of nesting sites / breeding grounds and interruption of migration routes may all contribute to this disturbance.



ENVIRONMENTAL ELEMENT	POTENTIAL ENVIRONMENTAL IMPACT
Surface Water and Wetlands	<ul style="list-style-type: none"> • The mining and road diversion activities, which are proposed to take place within 500m of wetlands of the Spookspruit and Laastepan catchments, along with the possible river diversion may have a negative influence on the surface water run-off regime, wetland functioning, ecological status and sensitivities. • The wetlands in the area may be affected by the proposed project, if the geology is altered to an extent that dewatering of the wetlands occurs. • Water quality may be negatively affected due to contaminants entering surface and groundwater resources.
Geohydrology	<ul style="list-style-type: none"> • Groundwater resources may be affected by the proposed opencast mining activities.
Cultural and Historical Resources	<ul style="list-style-type: none"> • Existing cultural and heritage resources such as graves, palaeontological findings and historic buildings in close proximity to the proposed project may be damaged or destroyed.
Socio-Economic Environment	<p>Traffic</p> <ul style="list-style-type: none"> • Traffic may be negatively affected due to the closing of the D253 road and construction of a new road or upgrading of an existing road. • Traffic may be negatively affected by the blast radius of the opencast mining area, resulting in temporary road closures. <p>Blasting and Vibrations</p> <ul style="list-style-type: none"> • The blasting required for the proposed opencast mining may cause temporary road closures, vibrations and structural damage to nearby residences. • Fly rock from blasting may negatively impact on the safety of surrounding landowners and employees. <p>Noise</p> <ul style="list-style-type: none"> • Construction and operational activities may negatively impact on the ambient noise levels in the area. <p>Economic</p> <ul style="list-style-type: none"> • The road deviation will potentially result in further distances to be travelled and higher travel expenses for regular road users. <p>Employment and Community Related Impacts</p> <ul style="list-style-type: none"> • The news of employment opportunities may result in an influx of workers to the area, thereby impacting existing community networks and perceptions of safety and crime levels. • Unmanaged workers may result in illegal township establishment and increased numbers of informal settlements. Such settlements often negatively impact a range of environmental elements. • Relocation of certain communities within the blast radius of the proposed mining area is a probability. <p>Consultation</p> <ul style="list-style-type: none"> • Unmanaged and insufficient consultation with communities and land owners often generates negative sentiment towards developments that persist beyond the construction phase of a project. • Insufficient consultation may result in unnecessary impacts to local inhabitants and land owners.

8. PLAN OF STUDY FOR EIA

8.1 Technical Process

8.1.1 Prepare Specialist Investigations

The Scoping Phase investigations have identified several potential environmental impacts associated with the proposed development. From the assessment, which was informed by authorities input, interested and affected parties and various professionals, a shortlist of potentially significant environmental impacts were identified for specialist investigations during the Impact Assessment Phase. Information from these studies will be integrated into the EIR/EMPR Report. The specialist investigations to be conducted during the Impact Assessment Phase of this project will consist of the following studies:

- Heritage Impact Assessment;
- Palaeontological Impact Assessment;
- Air Quality and Noise Impact Assessment;
- Visual Impact Assessment;
- Traffic Impact Assessment;
- Soils, Land Use and Land Capability Investigation;
- Terrestrial Ecological Assessment;
- Wetlands and Aquatics Assessment;
- Geohydrological Impact Assessment;
- Mine Water Balance Modelling;
- Blasting and Vibrations Impact Study;
- Social Impact Assessment; and
- Surface Water Assessment.

The findings from these investigations will be reflected in the EIR/EMPR. The proposed Terms of Reference (ToR) for each of these specialist studies is indicated below.

8.1.2 Specialist Studies: Terms of Reference (ToR)

8.1.2.1 ToR: Heritage Impact Assessment

A phase 1 heritage specialist study will be conducted for the project. The objectives of this study will be to:

- Undertake a brief desktop study;
- Consult South African Heritage Resources Information System (SAHRIS) heritage data bases (national, provincial);
- Study literature for contextual evidence;
- Consult earlier relevant studies;
- Integrate evidence as chapter in report;
- Undertake fieldwork;
- Reconnoitre larger area with vehicle;
- Conduct a foot survey of sensitive spots and areas;
- Identify and classify, GPS log, describe and photograph heritage resources; and

- Compile a phase 1 HIA report.

The baseline assessment will:

- Outline/describe types/ranges of heritage resources; and
- Produce maps indicating heritage resources, possible cultural landscapes, graves, etc.

The impact assessment and mitigation will:

- Determine significance of heritage resources;
- Establish possible impacts on heritage resources; and
- Describe/recommend mitigation (management) measures for heritage resources.

8.1.2.2. *ToR: Palaeontological Impact Assessment*

A phase 1 palaeontological specialist study will be conducted for the project. The objectives of this study will be to:

- Conduct a site survey of the proposed mine expansion area;
- Conduct a site survey of the , proposed haul road , pipelines, access roads and new road for farm access;
- Record any fossils found with GPS recordings;
- Conduct a field study of fossils to identify and determine importance and estimate extent of good fossil exposures;
- Photograph fossils; and
- Write and submit a detailed report and a letter of recommendation to SAHRA.

8.1.2.3. *ToR: Air Quality and Noise Impact Assessment*

An air and noise specialist study will be conducted for the project. The objectives of this study will be to:

Quantitative Assessment of Air Quality

- Review existing air quality management plans and impact assessments;
- Conduct a baseline study of existing air quality and atmospheric dispersion potential;
- Compile an emissions inventory for proposed changes to mining plan and road closure;
- Model atmospheric dispersion;
- Assess air quality impacts through a health risk and nuisance screening;
- Develop an air quality management plan for proposed changes to mining plan and road closure; and
- Compile a comprehensive air quality impact assessment report detailing all of the above.

Quantitative Assessment of Noise

- Review existing noise management plans and impact assessments;
- Conduct a baseline study of existing environmental noise levels;
- Model noise propagation;
- Assess of noise impacts;
- Develop an environmental noise management plan for proposed changes to mining plan and road closure; and
- Compile a comprehensive noise impact assessment report detailing all of the above.

8.1.2.4. ToR: Visual Impact Assessment

A visual specialist study will be conducted for the project. The objectives of this study will be to:

- Examine the baseline information (contours, mine infrastructure dimensions, vegetation, *inter alia*);
- Determine the area from which any part of the mine may be visible (viewshed);
- Identify the locations from which views of the mine may be visible (observation sites), which include buildings and roads;
- Analyse the observation sites to determine the potential level of visual impact that may result from the mine;
- Identify measures available to mitigate the potential impacts; and
- Compile a visual assessment report, indicating findings, fatal flaws, recommendations and maps indicating sensitive and/or no-go areas.

8.1.2.5. ToR: Traffic Impact Assessment

A traffic specialist study will be conducted for the project. The objectives of this study will be to:

- Conduct a preliminary site inspection and liaison;
- Undertake data collection;
- Classify traffic counts at selected intersections;
- 24hour/7day counts on the D253 and the R35;
- Geometric details of selected intersections;
- Visual assessment of existing road/pavement conditions;
- Trip making characteristics in the study area;
- Assessment of existing traffic conditions;
- SIDRA software analysis;
- Conduct trip re-distribution;

- Conduct a preliminary assessment of road pavement;
- Provide mitigation measures to prevent and/or mitigate any environmental impacts that may occur due to the proposed project; and
- Provide a traffic impact report in which the alternatives will be prioritised based on the results of the study.

8.1.2.6. *ToR: Soils, Land Use and Land Capability Investigation*

A soil and land capability specialist study will be conducted for the project. The objectives of this study will be to:

- Investigate and study the soils (survey, mapping including profiling and interpretation) and use the taxonomic soil classification system to characterise and classify the soils of the overall area on a comprehensive grid base for the study of the opencast mining and roadway;
- Assess and rate the land capability (mapping and interpretation) using the SA Chamber of Mines methodology for assessing land capability;
- Assess the sensitivity of the soils and land to disturbance as part of an impact assessment process;
- Develop a dominant soils/land form map and land capability plan for the areas that will be affected with specific emphasis on areas of high biodiversity sensitivity;
- Propose mitigation measures to reduce or mitigate potential impacts; and
- Compile a specialist report based on the results of the study.

8.1.2.7. *ToR: Terrestrial Ecological Assessment*

A terrestrial ecology specialist study will be conducted for the project. The objectives of this study will be to:

- Review the relevant existing reports and information, which are available from the mine;
- Conduct a desktop-based assessment of flora and fauna in the study region; and
- Conduct a field-based assessment of flora and fauna for the proposed additional mining area, road closure, and traffic diversion route and the additional haul road and pipeline route(s).

The ecological assessment report should provide:

- The methods used;
- A description of the receiving environment;
- A description of results from the baseline assessment;
- Assumptions that were made;
- Potential impacts of the proposed activities on local flora and fauna;
- Recommended impact mitigation measures; and
- A conclusion and other recommendations.

8.1.2.8. *ToR: Wetlands and Aquatics Assessment*

A wetlands and aquatics specialist study will be conducted for the project. The objectives of this study will be to:

Aquatic Ecological Investigation

- Characterise the biotic integrity of aquatic ecosystems associated with the area;
- Evaluate of the extent of site-related effects in terms of selected ecological indicators;
- Identify potential problems and recommend suitable mitigation measures;
- Identify listed aquatic biota based on the latest IUCN rankings, or other pertinent conservation ranking bodies;
- Identify sensitive or unique aquatic habitats which could suffer irreplaceable loss; and
- Compile the information in a report, indicating findings, recommendations and maps indicating sensitive and/or areas in which the project should avoid (if required).

Wetland Delineation

- Review existing information available;
- Use an aerial photographic study / Google Earth imagery to assess the accessibility, vegetation cover, drainage lines and slope aspects;
- Undertake a field visit to delineate the wetlands according to the DWS) methodology;
- Clearly demarcate the wetlands with provision of co-ordinates or demarcation of polygons;
- Identify impacts associated with the proposed development on the wetlands and provide mitigation measures for the identified impacts;
- Compile a map of the area, indicating the features observed; and
- Compile the information in a report, in which impacts and mitigation measures are presented.

8.1.2.9. *ToR: Geohydrological Impact Assessment*

A geohydrological specialist study will be conducted for the project. The objectives of this study will be to:

- Review existing information;
- Conduct a hydro census;
- Conduct a Geophysical Survey;
- Conduct Percussion Borehole Drilling;
- Conduct Aquifer Testing;
- Conduct a Geochemical Assessment;

- Run a Numerical Model;
- Conduct an aquifer vulnerability assessment; and
- Produce a report with the findings and recommendations in which the alternatives will be prioritised based on the results of the study.

8.1.2.10. ToR: Mine Water Balance Modelling

A mine water balance specialist study will be conducted for the project. The objectives of this study will be to:

- Clarify the client's requirements and obtain relevant information;
- Review available information (LOM plans, site layouts, geohydrological data);
- Measure areas (annualised LOM, surface infrastructure, catchments, etc.);
- Model the rainfall-runoff;
- Compile a model;
- Populate the model with information received;
- Run the model and generate output information; and
- Compile a short report detailing mine water balance.

8.1.2.11. ToR: Blasting and Vibrations Impact Study

A blasting and vibrations specialist study will be conducted for the project. The objectives of this study will be to:

- Conduct a site visit in order to obtain all relevant information onsite and offsite of the mining area;
- Review the site considering the various installations in and around the proposed blasting area;
- Review human and animal interface around the site and possible influences;
- Define the existing structures and review of possible concerns; and
- Monitor the current blasting in order to define attenuation constants for better accuracy of predictions on ground vibration, understanding current air blast influences and fly rock potential.

The report will comprise of:

- Introduction;
- Background information of the proposed site;
- Mining operations and / or blasting operations requirements;
- Effects of blasting operations: ground vibration, air blast, fly rock, noxious fumes;
- Risk Assessment;
- Mitigations;

- Recommendations;
- Basic structure information; and
- Conclusion.

8.1.2.12. ToR: Social Impact Assessment

A social specialist study will be conducted for the project. The objectives of this study will be to:

- Identify social impacts of the extension of the approved opencast pit;
- Identify social impacts of the closure of a Provincial Road running over the mine boundary that currently provides access to farmers south of the mine;
- Investigating the feasibility of potential other roads;
- Determining the specific impact on current road users (farming community); and
- Undertake a phase 1 Community Relocation Plan of small farming community living close to the proposed pit.

8.2 IMPACT ASSESSMENT METHODOLOGY

In order to ensure uniformity, a standard impact assessment methodology will be utilised so that a wide range of impacts can be compared. The impact assessment methodology makes provision for the assessment of impacts against the following criteria:

- Significance;
- Spatial scale;
- Temporal scale;
- Probability; and
- Degree of certainty.

A combined quantitative and qualitative methodology will be used to describe the impacts for each of the aforementioned assessment criteria. A summary of each of the qualitative descriptors along with the equivalent quantitative rating scale for each of the aforementioned criteria is given in **Table 8-1**.

Table 8-1: Quantitative rating and equivalent descriptors for the impact assessment criteria.

RATING	SIGNIFICANCE	EXTENT SCALE	TEMPORAL SCALE
1	VERY LOW	<i>Isolated corridor / proposed corridor</i>	<u>Incidental</u>
2	LOW	<i>Study area</i>	<u>Short-term</u>
3	MODERATE	<i>Local</i>	<u>Medium-term</u>
4	HIGH	<i>Regional / Provincial</i>	<u>Long-term</u>
5	VERY HIGH	<i>Global / National</i>	<u>Permanent</u>

A more detailed description of each of the assessment criteria is given in the following sections.

8.2.1 Significance Assessment

Significance rating (importance) of the associated impacts embraces the notion of extent and magnitude, but does not always clearly define these since their importance in the rating scale is very relative. For example, the magnitude (i.e. the size) of area affected by atmospheric pollution may be extremely large (1000km²) but the significance of this effect is dependent on the concentration or level of pollution. If the concentration is great, the significance of the impact would be HIGH or VERY HIGH, but if it is diluted it would be VERY LOW or LOW. Similarly, if 60 ha of a grassland type are destroyed the impact would be VERY HIGH if only 100 ha of that grassland type were known. The impact would be VERY LOW if the grassland type was common. A more detailed description of the impact significance rating scale is given in **Table 8-2** below.

Table 8-2: Description of the significance rating scale.

RATING		DESCRIPTION
5	VERY HIGH	Of the highest order possible within the bounds of impacts which could occur. In the case of adverse impacts: there is no possible mitigation and/or remedial activity which could offset the impact. In the case of beneficial impacts, there is no real alternative to achieving this benefit.
4	HIGH	Impact is of substantial order within the bounds of impacts, which could occur. In the case of adverse impacts: mitigation and/or remedial activity is feasible but difficult, expensive, time-consuming or some combination of these. In the case of beneficial impacts, other means of achieving this benefit are feasible but they are more difficult, expensive, time-consuming or some combination of these.
3	MODERATE	Impact is real but not substantial in relation to other impacts, which might take effect within the bounds of those which could occur. In the case of adverse impacts: mitigation and/or remedial activity are both feasible and fairly easily possible. In the case of beneficial impacts: other means of achieving this benefit are about equal in time, cost, effort, etc.
2	LOW	Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts: mitigation and/or remedial activity is either easily achieved or little will be required, or both. In the case of beneficial impacts, alternative means for achieving this benefit are likely to be easier, cheaper, more effective, less time consuming, or some combination of these.
1	VERY LOW	Impact is negligible within the bounds of impacts which could occur. In the case of adverse impacts, almost no mitigation and/or remedial activity is needed, and any minor steps which might be needed are easy, cheap, and simple. In the case of beneficial impacts, alternative means are almost all likely to be better, in one or a number of ways, than this means of achieving the benefit. Three additional categories must also be used where relevant. They are in addition to the category represented on the scale, and if used, will replace the scale.
0	NO IMPACT	There is no impact at all - not even a very low impact on a party or system.

8.2.2 Spatial Scale

The spatial scale refers to the extent of the impact i.e. will the impact be felt at the local, regional, or global scale. The spatial assessment scale is described in more detail in **Table 8-3**.

Table 8-3: Description of the significance rating scale.

RATING		DESCRIPTION
5	Global/National	The maximum extent of any impact.
4	Regional/Provincial	The spatial scale is moderate within the bounds of impacts possible, and will be felt at a regional scale (District Municipality to Provincial Level). The impact will affect an area up to 50km from the proposed site / corridor.
3	Local	The impact will affect an area up to 5km from the proposed route corridor / site.
2	Study Area	The impact will affect a route corridor not exceeding the boundary of the corridor / site.
1	Isolated Sites / proposed site	The impact will affect an area no bigger than the corridor / site.

8.2.3 Duration Scale

In order to accurately describe the impact it is necessary to understand the duration and persistence of an impact in the environment. The temporal scale is rated according to criteria set out in **Table 8-4**.

Table 8-4: Description of the temporal rating scale.

RATING		DESCRIPTION
1	Incidental	The impact will be limited to isolated incidences that are expected to occur very sporadically.
2	Short-term	The environmental impact identified will operate for the duration of the construction phase or a period of less than 5 years, whichever is the greater.
3	Medium term	The environmental impact identified will operate for the duration of life of the project.
4	Long term	The environmental impact identified will operate beyond the life of operation.
5	Permanent	The environmental impact will be permanent.

8.2.4 Degree of Probability

The probability or likelihood of an impact occurring will be described, as shown in **Table 8-5** below.

Table 8-5: Description of the degree of probability of an impact occurring.

RATING	DESCRIPTION
1	Practically impossible
2	Unlikely
3	Could happen
4	Very Likely
5	It's going to happen / has occurred

8.2.5 Degree of Certainty

As with all studies it is not possible to be 100% certain of all facts, and for this reason a standard "degree of certainty" scale is used as discussed in **Table 8-6**. The level of detail for specialist studies is determined according to the degree of certainty required for

decision-making. The impacts are discussed in terms of affected parties or environmental components.

Table 8-6: Description of the degree of certainty rating scale.

RATING	DESCRIPTION
Definite	More than 90% sure of a particular fact.
Probable	Between 70 and 90% sure of a particular fact, or of the likelihood of that impact occurring.
Possible	Between 40 and 70% sure of a particular fact, or of the likelihood of an impact occurring.
Unsure	Less than 40% sure of a particular fact or the likelihood of an impact occurring.
Can't know	The consultant believes an assessment is not possible even with additional research.

8.2.6 Quantitative Description of Impacts

To allow for impacts to be described in a quantitative manner in addition to the qualitative description given above, a rating scale of between 1 and 5 was used for each of the assessment criteria. Thus the total value of the impact is described as the function of significance, spatial and temporal scale as described below.

$$\text{Impact Risk} = \frac{(\text{SIGNIFICANCE} + \text{Spatial} + \text{Temporal}) \times \text{Probability}}{3 \quad 5}$$

An example of how this rating scale is applied is shown in **Table 8-7**.

Table 8-7: Example of Rating Scale.

IMPACT	SIGNIFICANCE	SPATIAL SCALE	TEMPORAL SCALE	PROBABILITY	RATING
	LOW	<i>Local</i>	<u>Medium Term</u>	<i>Could Happen</i>	
Impact to air	2	3	3	3	1.6

Note: The significance, spatial and temporal scales are added to give a total of 8, that is divided by 3 to give a criteria rating of 2,67. The probability (3) is divided by 5 to give a probability rating of 0,6. The criteria rating of 2,67 is then multiplied by the probability rating (0,6) to give the final rating of 1,6.

The impact risk is classified according to 5 classes as described in **Table 8-8**.

Table 8-8: Impact Risk Classes.

RATING	IMPACT CLASS	DESCRIPTION
0.1 – 1.0	1	Very Low
1.1 – 2.0	2	Low
2.1 – 3.0	3	Moderate
3.1 – 4.0	4	High
4.1 – 5.0	5	Very High

Therefore with reference to the example used for air quality above, an impact rating of 1.6 will fall in the Impact Class 2, which will be considered to be a low impact.

8.3 Public participation during the Impact Assessment

Public participation during the Impact Assessment Phase of the EIA will mainly involve a review of the findings of the EIA, presented in a Draft Environmental Impact Report (EIR), the Draft Environmental Management Programme (EMPr) and the volumes of specialist studies. I&APs will be informed in advance regarding the availability of these reports, means of accessing the report, dates and venues for review thereof.

The public participation for this phase will consist of the following proposed steps:

- Announcement of the availability and public review of the Draft EIR;
- Announcement of the availability of the Final EIR; and
- Notification of the authorities' decision with regards to Environmental Authorisation.

8.3.1 Announcing the availability of the Draft Reports

Once the specialist assessments have been conducted the draft reports as mentioned above would be ready for public review. A letter will be circulated to all registered I&APs, informing them of progress made with the study and that the draft reports are available for comment. The report will be distributed to public places.

8.3.2 Public review of the Draft Reports

The EIA Guidelines specify that stakeholders must have the opportunity to verify that their issues have been captured and assessed before the relevant reports will be approved. The findings of the specialist assessments will be integrated into the draft reports. The reports will be written in a way accessible to stakeholders in terms of language level and general coherence. The draft reports will have a comprehensive project description, motivation, and description of alternatives considered and also the findings of the assessment and recommended mitigation measures. It will further include the Comments and Responses Report, which will list every issue raised, with an indication of where the issue was dealt with in the draft reports. The findings of the assessment and recommended mitigation measures will also be incorporated into the draft reports.

8.3.3 Announcing the availability of the Final Reports

After comments from I&APs have been considered, all stakeholders on the database will receive a letter to report on in the status of the process, to thank those who commented to date and to inform them that the final reports have been submitted to the lead authority for consideration. I&APs will also be provided the opportunity to comment on the final reports.

8.3.4 Announce authorities' decision on the Environmental Authorisations

The authority's decision on whether or not to grant Environmental Authorisation will be communicated to stakeholders as specified in the conditions. It is anticipated that the decisions will be communicated through the following methods:

- Letters to individuals and organisations on the mailing list; and
- Advert in local or regional newspapers.

9. **KNOWLEDGE GAPS**

At present, several gaps in the information available regarding the project have been identified. The following information will be gathered to supplement out-dated or insufficient information:

- A finalised LOM plan as well as various scenarios will be developed in the next phase of the project;
- The road route alternatives will be finalised in the next phase of the project; and
- The locations of the other proposed infrastructure can only be finalised once the LOM has been determined.

10. **CONCLUSION AND WAY FORWARD**

The Scoping Report has been compiled in order to give an introduction to the proposed extension of opencast mining project at the southern Klipfontein Section. This Scoping Report forms part of the legal requirements of the MPRDA and the NEMA. It provides a baseline overview of the project alternatives, receiving environment and possible impacts on the physical, biological and social environment that may result from the proposed project.

The objective of the scoping report is to give authorities and I&APs, an overview of the planned activities, and their potential environmental impacts. Following from Scoping, the impact assessment phase will commence, which will include the undertaking of specialist studies, assessment of impacts and compilation of an EIR/EMPR. This report will be placed on public review where I&APs and authorities may comment and raise issues that will need to be addressed in the EIR/EMPR. The EMPR/r will include management plans to avoid or reduce negative impacts and to enhance positive impacts.

In conclusion, it is recommended that this Scoping Report for the proposed extension of mining at Klipfontein and the deviation of the Road D253 be approved in order to further assess the impacts and propose appropriate mitigation measures. Should the anticipated impacts identified in the Scoping Report be mitigated sufficiently the proposed project will:

- Allow for the continued operation of the mine;
- Continuation of employment opportunities; and
- Continued supply of coal for electricity generation.

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BHP BILLITON ENERGY COAL SOUTH AFRICA (PTY) LIMITED

MIDDELBURG MINE KLIPFONTEIN SECTION PROPOSED EXTENSION OF OPENCAST
OPERATIONS AND ASSOCIATED RELOCATION OF ROAD D253

FINAL SCOPING REPORT

Report: JW104/14/E333 - Rev A

Appendix A

AUTHORITY CONSULTATION

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BHP BILLITON ENERGY COAL SOUTH AFRICA (PTY) LIMITED

MIDDELBURG MINE KLIPFONTEIN SECTION PROPOSED EXTENSION OF OPENCAST
OPERATIONS AND ASSOCIATED RELOCATION OF ROAD D253

FINAL SCOPING REPORT

Report: JW104/14/E333 - Rev A

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PUBLIC PARTICIPATION

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